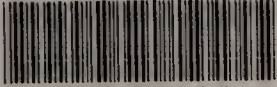


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Final Environmental Impact Statement

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Phoenix District

21605 North 7th Avenue

Phoenix, Arizona 85027-2929

www.blm.gov/az/

In Reply Refer To:

DOI-BLM-AZ-P020-2012-0001-EIS

AZA-34177

Dear Reader:

Enclosed is the Sonoran Valley Parkway Project (Parkway) Final Environmental Impact Statement (Final EIS) for the Bureau of Land Management (BLM) Lower Sonoran Field Office (LSFO), Phoenix District Office. The BLM prepared this document in collaboration with several cooperating agencies, including Arizona Department of Transportation, Arizona Game and Fish Department, Arizona State Land Department, Flood Control District of Maricopa County, City of Maricopa, Maricopa Association of Governments, and National Park Service.

The Final EIS analyzes the potential impacts of granting a right-of-way (ROW) to the City of Goodyear to construct a proposed 15- to 18-mile long Parkway. The Parkway would be located in southern Goodyear, Maricopa County, Arizona. The majority of the Parkway would occur on BLM-administered lands, as well as on private and Arizona State Land Department lands. The BLM-administered lands within the proposed Parkway area are managed under the BLM's Lower Sonoran Resource Management Plan. The Final EIS analyzes in detail the No Action Alternative, the BLM Preferred Alternative, three action alternatives, and two sub-alternatives. The BLM has identified Alternative A in combination with Sub-Alternative G as the BLM Preferred Alternative. The Final EIS is being released to inform the public and interested parties of potential impacts associated with the proposed Parkway ROW.

The BLM will decide whether to grant, grant with modifications, or deny the requested ROW. The BLM's decision will be documented in a Record of Decision, which will be signed before the ROW grant is issued.

Copies of the Final EIS have been sent to Federal, state, and local government agencies and American Indian tribes, many of whom have been involved as cooperating or consulting agencies. Copies of the Final EIS are available for public inspection at the BLM Phoenix District Office at the above address. In addition, the Final EIS can be viewed at libraries in the following locations:

Avondale Civic Center Library

11350 West Civic Center Drive

Avondale, Arizona 85323

Phone: (623) 333-2602

Goodyear Branch library

250 North Litchfield Road, Suite 185

Goodyear, Arizona 85338

Phone: (602) 652-3000

Sam Garcia Western Avenue Library

495 East Western Avenue

Avondale, Arizona 85323

Phone: (623) 333-2665

Maricopa Public Library

41600 West Smith-Enke Road
Building #10


Maricopa, Arizona 85138

Phone: (520) 568-2926

You may also access the document on the Internet at: <https://go.usa.gov/xP9zF>.

Thank you for your continued interest in the Parkway. We appreciate your contribution to this process.

Sincerely,



Edward J. Kender, Lower Sonoran Field Manager

Bureau of Land Management

November 2018

EIS. Appendix Q of this Final EIS provides the comments received on the DEIS and BLM's responses to those comments.

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- C. Signed Programmatic Agreement
- D. AGFD Design Recommendations
- E. Engineering Plans
- F. Geologic Maps
- G. FEMA Maps
- H. Species Tables
- I. Visual Contrast Rating Sheets
- J. Alternative Screening
- K. Initial Construction, Construction Activities, and Operations and Maintenance
- L. List of Preparers
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EXECUTIVE SUMMARY

ES 1 INTRODUCTION

The Bureau of Land Management (BLM) received a proposal from the City of Goodyear (City) in February 2008 for a right-of-way (ROW) for the construction of a two- to six-lane, 250-foot-wide, approximately 15- to 18-mile long Sonoran Valley Parkway. The Proposed Action, Alternative A, would encompass approximately 476 acres, including two short-term construction ROWs. Approximately 283 acres of the proposed ROW are on BLM-administered land, approximately 32 acres are on Arizona State Land Department (ASLD) lands, and approximately 161 acres are on private lands.

The BLM as the lead Federal agency identified a portion of Alternative A in combination with Sub-Alternative G, as the BLM Preferred Alternative. It would encompass approximately 472 acres, including two short-term construction ROWs. Approximately 283 acres of the proposed ROW are on BLM-administered land, approximately 32 acres are on ASLD lands, and approximately 157 acres are on private lands. The BLM Preferred Alternative is different from Alternative A only at the southern end of the Parkway, where the alignment was modified in order to minimize potential impacts to sensitive cultural resources and to avoid the Mobile School.

The BLM-administered lands in the ROW are managed under the *Lower Sonoran Resource Management Plan* (LSFO RMP) (BLM 2012a). All alternatives considered conform to the LSFO RMP. This Final Environmental Impact Statement (Final EIS) analyses in detail the No Action Alternative, the BLM Preferred Alternative, three action alternatives, and two sub-alternatives (Figure ES-1). Seven additional alternatives and two sub-alternatives were considered but not analyzed.

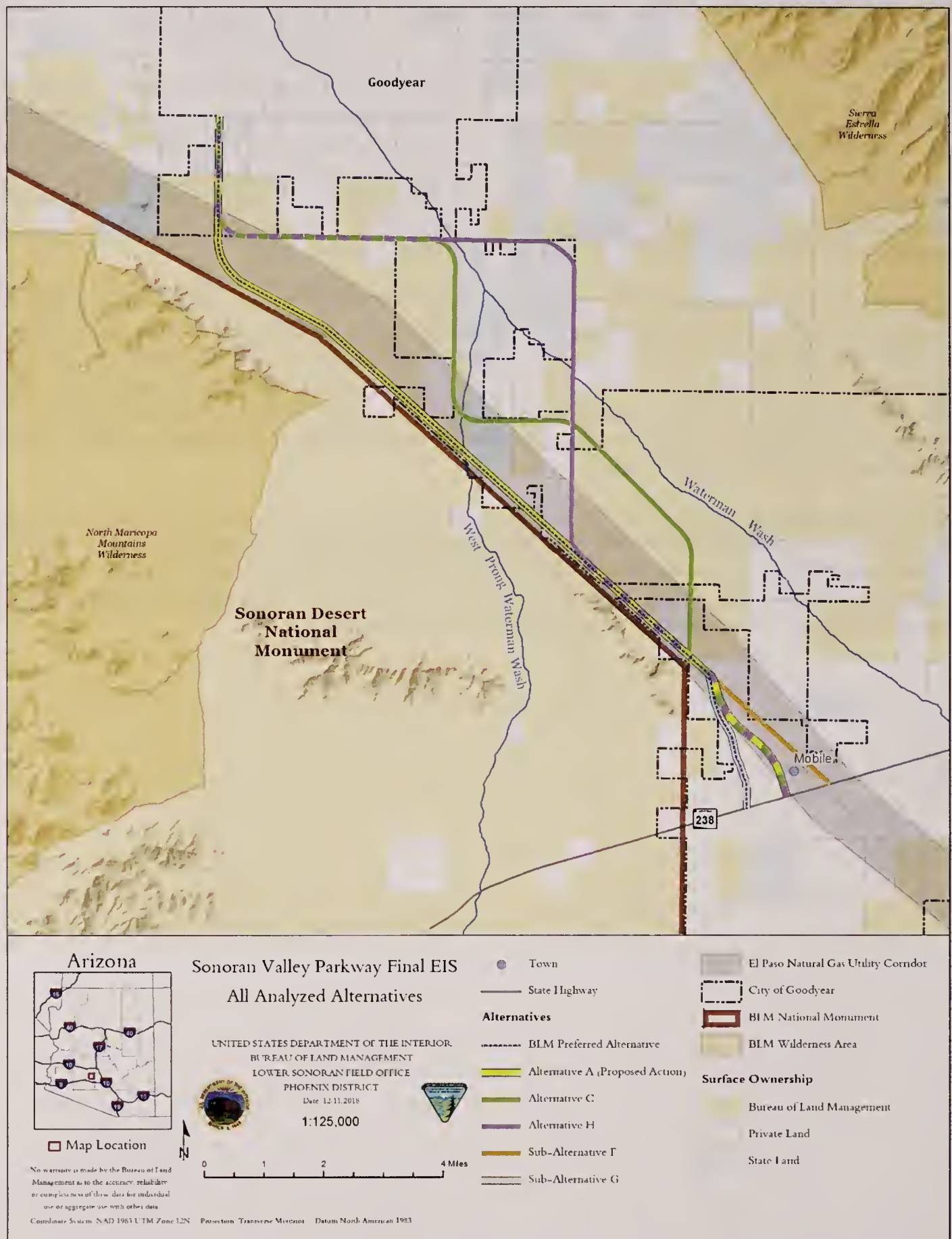


Figure ES-1. All Analyzed Alternatives.

ES 2 PURPOSE AND NEED

The BLM's purpose and need for this action is to respond to the City's ROW application under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [USC] 1701 *et seq.*) for a perpetual ROW grant to construct, operate, and maintain a proposed two- to six-lane Parkway in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws.

ES 3 PUBLIC INVOLVEMENT

ES 3.1 Public Scoping

The BLM conducted internal, agency, and public scoping to solicit input and identify the environmental concerns and issues associated with the Parkway.

A Notice of Intent (NOI) was published in the *Federal Register* on April 2, 2008. This initiated a 30-day formal public scoping period. The BLM received 17 scoping comments, which were considered in development of alternatives.

ES 3.1.1 Issues Identified

Potential impacts addressed in this Final EIS were identified internally, with public input, and from agencies during the scoping process. The BLM prepared a scoping report, which can be found in Appendix Q.

The main issue categories were:

- Impacts to Air Quality
- Impacts to Cultural Resources and Historic Properties
- Impacts to Grazing Allotments
- Noise
- Hazardous Material, Public Health and Safety
- Impact to Natural Resources, Habitat and Its Use
- Social and Economic Conditions
- Travel Management
- Impacts to Visual Resource Management, Water and Soil
- Cumulative Impacts

ES 4 ALTERNATIVES

ES 4.1 No Action Alternative

Under the No Action Alternative, the City's ROW application to develop the Parkway would not be approved. The City would have to seek alternative means in order to meet anticipated future transportation demands.

ES 4.2 Action Alternatives

All action alternatives would provide for a 250-foot-wide corridor that would accommodate a two- to six-lane parkway. Grading, drainage, traffic speeds of 55 miles per hour (mph) and periodic interchanges would provide improved access to public and private lands in the project area. Additionally, at-grade intersections

will support future transportation connections. All alternatives would provide opportunities for improved access to BLM-administered lands. Under all action alternatives, the two-lane Parkway would accommodate approximately 24,000 vehicles per day. All action alternatives would provide access to the Butterfield Overland Stage Route and Juan Bautista de Anza National Historic Trail (Anza NHT).

The Parkway would be constructed in three phases, described below. Expansion beyond a two-lane Parkway would require further authorizations from the BLM and would be subject to additional environmental review Phase(s) 2 and 3 would include the design characteristics of a parkway (Appendix K).

Phase 1 (Initial).

- Analyzed in this Final EIS;
- A two-lane road (Diagram 2);
- Construction 20-foot wide construction access road;
- No U-turn crossovers;
- No median;
- Would accommodate 24,000 vehicles per day;
- Approximately 32-months to complete;
- Reclaim the construction access road.

Phase 2 (may also be combined with Phase 3)

- Would be subject to additional environmental review
- A four-lane parkway (Diagram 3);
- Installation of median;
- No U-turn crossovers;
- Approximately 24-months to complete.

Phase 3 (if needed)

- Would be subject to additional environmental review
- A six-lane parkway (Diagram 3);
- Median;
- Installation of U-turn crossovers;
- Would accommodate 72,000 vehicles per day;
- Approximately 18-months to complete.

ES 4.2.1 BLM Preferred Alternative

A portion of Alternative A and Sub-Alternative G have been identified as the BLM Preferred Alternative, which is a combination of these alternatives. This combination will accomplish the purpose and need for the Federal action while fulfilling the BLM's statutory responsibilities, giving consideration to economic, environmental, and technical factors. The BLM Preferred Alternative would be approximately 15 miles in length and include the following two components:

Portions of Alternative A:

- Crosses approximately 10 miles of BLM-administered land, 1 mile of ASLD land, and 2 miles of private land.
- Represents the most efficient and direct route to connect the City to the community of Mobile.
- Identifies 35 wash crossings, including 15 low-water crossings, 17 culverts, and 3 arch span-type culverts (wildlife crossings)
- Two short-term construction ROWs approximately 250-feet by 250-feet and 3 short-term construction easements have been identified.

Sub-Alternative G:

- Crosses approximately 2 miles of private land. Provides a different alignment for approximately the last 3 miles of the southern portion of Alternative A (also Alternatives C and H).
- Avoids Lung Homestead Site.
- Modifies alignment in order to minimize potential impacts to sensitive cultural resources.
- Intersects with SR 238 approximately 1 mile west of the Alternative A's terminus.
- Sub-Alternative G would be located entirely on private lands.

ES 4.2.2 Alternative A (Proposed)

Alternative A was developed by the City and represents the Proposed Action, providing the most direct and efficient connection, which is essential for emergency services to the annexed Sonoran Valley area. It would cross approximately 16 miles: 10 miles of BLM-administered land, 1 mile of ASLD land, and 5 miles of private land.

- Represents the most efficient and direct route to connect the City to the community of Mobile.
- Identifies 39 wash crossings, including 19 low-water crossings, 17 culverts, and three arch span-type culverts (wildlife crossings), as well as two short-term construction ROWs approximately 250-feet by 250-feet.
- Terminates adjacent to Mobile Elementary School.
- Impacts the Lung Homestead Site.

ES 4.2.3 Alternative C

Alternative C was developed to distance the Parkway from the Sonoran Desert National Monument (SDNM). Alternative C would cross approximately 18 miles: 12 miles of BLM-administered land, 1 mile of ASLD land, and 5 miles of private land. This alternative would start at Riggs Road at the north end and go south for approximately 2 miles along Rainbow Valley Road. The road would then go directly east along Patterson Road for approximately 6 miles, then proceed south along the Bullard Avenue before going east-southeast for 5 miles.

- Redirects noise and visual impacts away from the SDNM.
- Splits multiple pastures and results in areas without water sources; additional water sources (subject to separate environmental review) may be required for continued grazing.
- Identifies 44 wash crossings, 30 low-water crossings, 12 culverts, and two arch span-type culverts (wildlife crossings), as well as 2 short-term construction ROWs approximately 250-feet by 250-feet.
- Does not align within the existing utility corridor.

ES 4.2.4 Alternative H

Alternative H provides a mixture of characteristics from the Proposed Action and Alternative C. It would cross approximately 18 miles: 8 miles of BLM-administered land, 4 mile of ASLD land, and 6 miles of private land.

- Identifies 40 wash crossings, 29 low-water crossings, 8 culverts, and 3 arch span-type culverts (wildlife crossings), as well as 2 short-term construction ROWs approximately 250-feet by 250-feet.
- Splits multiple pastures and results in areas without water sources; additional water sources (subject to separate environmental review) may be required for continued grazing.
- Would impact greater amount of State and private land.

ES 4.2.5 Sub-Alternative F

Sub-Alternative F would provide a different alignment for the last approximately 3 miles of Alternatives A, C and H.

- Entirely on private lands.
- Avoids Lung Homestead Site.
- Modifies Alternative A in the southern portion of the Parkway in order to minimize potential impacts to sensitive cultural resources.
- Would pass directly through the Butterfield Station Landfill.

ES 5 ENVIRONMENTAL IMPACTS

Detailed descriptions of the impacts under each alternative are provided in Chapter 4, along with a discussion of residual impacts, short-term uses versus long-term productivity, and irretrievable and irreversible commitments of resources that would result from implementation of the alternatives. Cumulative impacts to resource values and uses of the project area that would result from implementation of the alternatives are also disclosed in Chapter 4. A summary describing the general conclusions of the effects analysis for the action alternatives is presented below. Impacts to resources are avoided or minimized through implementation of the Programmatic Agreement (PA), best management practices (BMPs), applicable design features, and standard operating procedures (SOPs) (Appendices C, P and R).

ES 5.1 Air Resources

The project area is a maintenance area with respect to carbon monoxide (CO) and 1-hour ozone (O₃) National Ambient Air Quality Standards (NAAQS) and a nonattainment area for particulate matter from 2.5 to 10 microns in diameter (PM₁₀). Project-specific and cumulative air quality impacts would occur under all action alternatives. Construction emissions could contribute to a short-term exceedance of the NAAQS in site-specific areas. Operational emissions are not expected to increase the frequency or severity of a new violation of the NAAQS. An example of a design feature that would be implemented to minimize impacts to air resources would include applying dust suppressants during Parkway construction.

ES 5.2 Cultural and Heritage Resources

Three National Register of Historic Places (NRHP)-eligible historic properties and the Anza NHT were identified within the cultural and heritage resources study area. Two sites—the Lung Homestead and AZ T:15:94(ASM)—as well as the Butterfield Overland Stage Route and the Anza NHT would be impacted

under all the action alternatives, except the BLM Preferred Alternative would avoid impacts to the Lung Homestead site. Pedestrian crossovers and interpretive signage would be installed to provide information and public access to the Butterfield Overland Stage Route and Anza NHT.

ES 5.3 Soil Resources

Soils in the project area are those common to alluvial valleys. The topography does not include hills that would be cut or graded down or valleys that would be filled. Under all action alternatives, long-term disturbance to soils would occur in the Parkway footprint and graded shoulders. Short-term productivity of soils would be affected in the 250-foot-wide ROW during construction, as the soils would be temporarily disturbed, graded, and compacted. During construction activities, erosion control measures would include the use of straw wattles, silt fences or other devices to prevent soil erosion or sediment loading. A reclamation and revegetation plan would be implemented for the disturbed areas, resulting in long-term impacts to soil productivity to only the operational ROW.

ES 5.4 Vegetation Resources

The implementation of any of the action alternatives would result in a site-specific, negligible, long-term direct impact to vegetation communities, including habitat and individuals of Arizona Native Plant Law (ANPL)-protected plant species due to short-term and long-term vegetation removal. All temporarily disturbed areas would be reclaimed and seeded with a BLM-approved mix. Under all action alternatives, there would be an increased chance of noxious and invasive plant species introduction and establishment, which could alter the vegetative composition. During operation, the City would follow an integrated weed management plan to address the occurrence of noxious and invasive weeds within the project area.

ES 5.5 Visual Resources

The implementation of any action alternative would result in the Parkway being visible in the Rainbow Valley, which would alter the existing landscape and create contrasts to the existing views. In the short-term, construction activities would increase fugitive dust emissions. The visual contrasts from the Parkway would be weak to moderate depending on the alternative chosen. Measures that would be implemented to minimize visual contrast would include use of appropriate colors to blend with the surrounding environment. Where new culverts, bridge crossings or sidewalks are installed, materials with hues of olive, tan or browns would be used. Fencing, sign posts and light poles would be self-weathering steel or treated with a self-weathering agent.

ES 5.6 Water Resources

The implementation of any action alternative would result in direct impacts to ephemeral washes, floodplains, and surface drainage at wash crossings with the installation of engineered road crossings. Once wash crossings are installed, surface water velocity and sediment load are not expected to be significantly different from pre-construction conditions, which will allow the form and function of the floodplain to stay mostly intact. Impacts to groundwater quantity are considered negligible because total water demands for the Parkway are very minimal. During construction activities, erosion control measures would include the use of straw wattles, silt fences or other devices to prevent soil erosion or sediment loading. All temporarily disturbed areas would be reclaimed and seeded with a BLM-approved mix.

ES 5.7 Wildlife and Special-Status Species

All action alternatives would impact wildlife species, including 27 priority species in the Lower Sonoran Field Office (LSFO), and special-status species, from construction and operation of the Parkway. These

include habitat loss, degradation, fragmentation, long-term and short-term displacement, mortality, noise disturbance, and behavioral changes associated with increased nighttime light levels. Preconstruction surveys would be conducted to identify sensitive species of concern that may occur in the project area and determine the need for a biological monitor to be present during construction activities. Construction equipment and employee vehicles would not exceed 25 miles per hour (mph). Personnel would attend wildlife awareness training, including how to handle Sonoran desert tortoise if encountered during construction. ROW fencing would meet BLM design standards for wildlife. The Parkway would include warning signage for motorists to watch for wildlife.

ES 5.8 Lands and Realty

For all action alternatives, lands would be converted from their existing respective land uses (i.e., grazing, agriculture, dispersed recreation) to a transportation-based land use.

ES 5.9 Livestock Grazing

For all action alternatives, the Beloat and Conley grazing allotments would be decreased in size. The Beloat Allotment would be bisected from northwest to southeast. The City and BLM would coordinate with each permittee to modify current fencing to enable continued use of existing range improvements. The City would make available livestock water at South Well and Yonker Tank for the Beloat allotment. The City would reimburse the permittees for necessary modifications. Temporary fencing would be installed along the ROW to prevent entry of cattle. Cattle guards and gates would be installed along allotment fencing as appropriate.

ES 5.10 Recreation Management

Opportunities for dispersed recreation in the adjacent areas would be interrupted during construction of the Parkway because of the changes in patterns of access caused by construction traffic and vehicular noise. In the long-term, all action alternatives would improve access to BLM-administered lands.

ES 5.11 Travel Management

Existing legal access would be maintained where the Parkway would intersect existing BLM roads. During construction, there would be temporary limitations on access through the project area. Alternative routes would be available. Once the Parkway is in operation, under all action alternatives, the use of these roads would provide beneficial long-term access to and from Rainbow Valley. The use of the Parkway would serve to alleviate safety concerns and road deterioration from travel on the El Paso Natural Gas (EPNG) unpaved pipeline maintenance road.

ES 5.12 Special Designations

The study area includes the following National Conservation Lands and special designations: SDNM, North Maricopa Mountains Wilderness, South Maricopa Mountains Wilderness, Sierra Estrella Wilderness, and the Anza NHT. The proposed Parkway would not cross the SDNM or designated wilderness. The ROW would be enclosed by fencing, which would prevent unauthorized cross-country travel by off-highway vehicles (OHVs) into the SDNM.

The Parkway would have direct impacts where it crosses the Butterfield Overland Stage Route and the Anza NHT. During construction, activities may temporarily impede access for hikers who are following either trail. Environmental protection measures that would be implemented for the Anza NHT and Butterfield Overland Stage Route would include interpretative signage, crossovers, and vehicle parking for

trail access. Both the Anza NHT and Butterfield Overland Stage Route would maintain their overall character; however, the associated setting(s) of the Anza NHT and Butterfield Overland Stage Route in the site-specific locations where the proposed Parkway would cross the Anza NHT and Butterfield Overland Stage Route would change.

ES 5.13 Noise

All action alternatives will increase noise levels for residences or schools located along the ROW, causing a long-term adverse impact. The Parkway would be made out of rubberized pavement, designed to reduce road noise.

ES 5.14 Hazardous Materials and Public Safety

The implementation of any action alternative would result in the use of hazardous materials and creation of solid waste during construction. However, implementation of any alternative would not result in direct or indirect impacts from hazardous materials or solid waste to surrounding soils, surface water, or groundwater. During construction and operation, hazardous materials would be stored onsite in storage tanks or containers, specifically designed to contain such materials. Temporary fences would be placed to prevent public entry into construction areas. Traffic control measures would be implemented where existing roads cross through the project area.

ES 5.15 Social and Economic Resources

Impacts on social and economic resources would include the potential for increased residential and commercial growth as an indirect effect of the introduction of a Parkway; increased transportation and access to enhanced public health and safety and emergency services; and improved recreational access; and change from a natural/rural setting to a more developed rural setting.

ES 5.16 Design Features

Under all action alternatives, the City has voluntarily committed to design features that would be implemented and included in the Record of Decision (ROD) as measures to avoid and minimize adverse impacts to sensitive environmental resources (Appendix R). All design features, BMPs, and SOPs (Appendix P) would be incorporated into the ROD as terms and conditions of the ROW grant.

ES 5.17 Agency Coordination/Consultation

The Arizona Department of Transportation (ADOT), Arizona Game and Fish Department (AGFD), ASLD, Maricopa Association of Governments (MAG), National Park Service (NPS), and Flood Control District of Maricopa County (FCDMC) are cooperating agencies (Chapter 5).

The BLM requested consultation with the Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Tohono O'odham Nation, Ak-Chin Indian Community, and Hopi Tribes in June 2008, and has continued to communicate with the tribes regularly through the EIS development process (Chapter 5).

BLM initiated consultation with the State Historic Preservation Office (SHPO) for effects to cultural properties in March 2013, and has developed a PA to guide the consultation process through implementation. The PA was executed on June 1, 2016 (Appendix C).

ES 6 NEXT STEPS

Following the U.S. Environmental Protection Agency's publication of an NOA for the Final EIS in the *Federal Register*, there will be a 30-day availability period. No sooner than 30 days after the NOA has been published, a ROD documenting the decision will be signed by the authorized officer, the BLM Field Manager for the LSFO. The ROD will apply to BLM-administered lands only. In order to construct the Parkway on non-BLM lands, the City would need to obtain the necessary easements from those parties involved.

1 PURPOSE AND NEED

1.1 INTRODUCTION

The City of Goodyear (City) is proposing to construct a minimum of a two-lane, and up to a six-lane, 15- to 18-mile Sonoran Valley Parkway (Parkway) between Goodyear and the community of Mobile (Mobile). The Parkway would cross lands under the jurisdiction of the Bureau of Land Management (BLM), Arizona State Land Department, and private owners (Figure 1-1). The BLM decision is to approve, approve with modification, or deny issuance of a 250-foot right-of-way (ROW) grant to the City. The BLM has prepared this Final Environmental Impact Statement (Final EIS) to analyze and disclose the environmental consequences of the City's proposal and several reasonable alternatives.

Construction of the Parkway is expected to occur in phases beginning with a two-lane road, which would allow the City to provide access and services to the Sonoran Valley Planning Area (SVPA). Additional construction (i.e., up to six lanes) is expected to take place over many years based on the City's future needs and capabilities. The analysis in Chapter 4 fully addresses the environmental impacts of constructing Phase I (two-lanes of the Parkway), and includes consideration, based on current information, of up to four additional lanes if needed in the future. The timeframe for the phased construction is unknown and dependent on demands within the SVPA. Expansion beyond a two-lane Parkway would require further authorizations from the BLM and would be subject to additional environmental review.

This Final EIS discloses the environmental impacts of the alternatives considered. Decisions made regarding the 250-foot ROW will be documented in a Record of Decision (ROD) signed by the authorized officer, the Field Manager for the BLM Lower Sonoran Field Office (LSFO). The ROD will apply to BLM-administered lands only.

1.2 BLM PURPOSE AND NEED

The BLM's purpose and need for this action is to respond to the City's ROW application under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [USC] 1701 *et seq.*) for a ROW grant to construct and maintain a proposed two- to six-lane Parkway in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws.

The BLM's action is:

- To respond to the City's request (ROW application AZA-34117) to construct a new, permanent, major arterial road (Parkway) from Goodyear proper to State Route (SR) 238 near Mobile that would accommodate anticipated future growth as described in the City's planning documents.
- To meet public needs for multiple uses of public lands while avoiding or minimizing adverse impacts to other resource values.
- To evaluate whether this proposed project is an appropriate and acceptable use of BLM-administered land and in the public interest as required by Title V of FLPMA (43 USC 1761–1771).

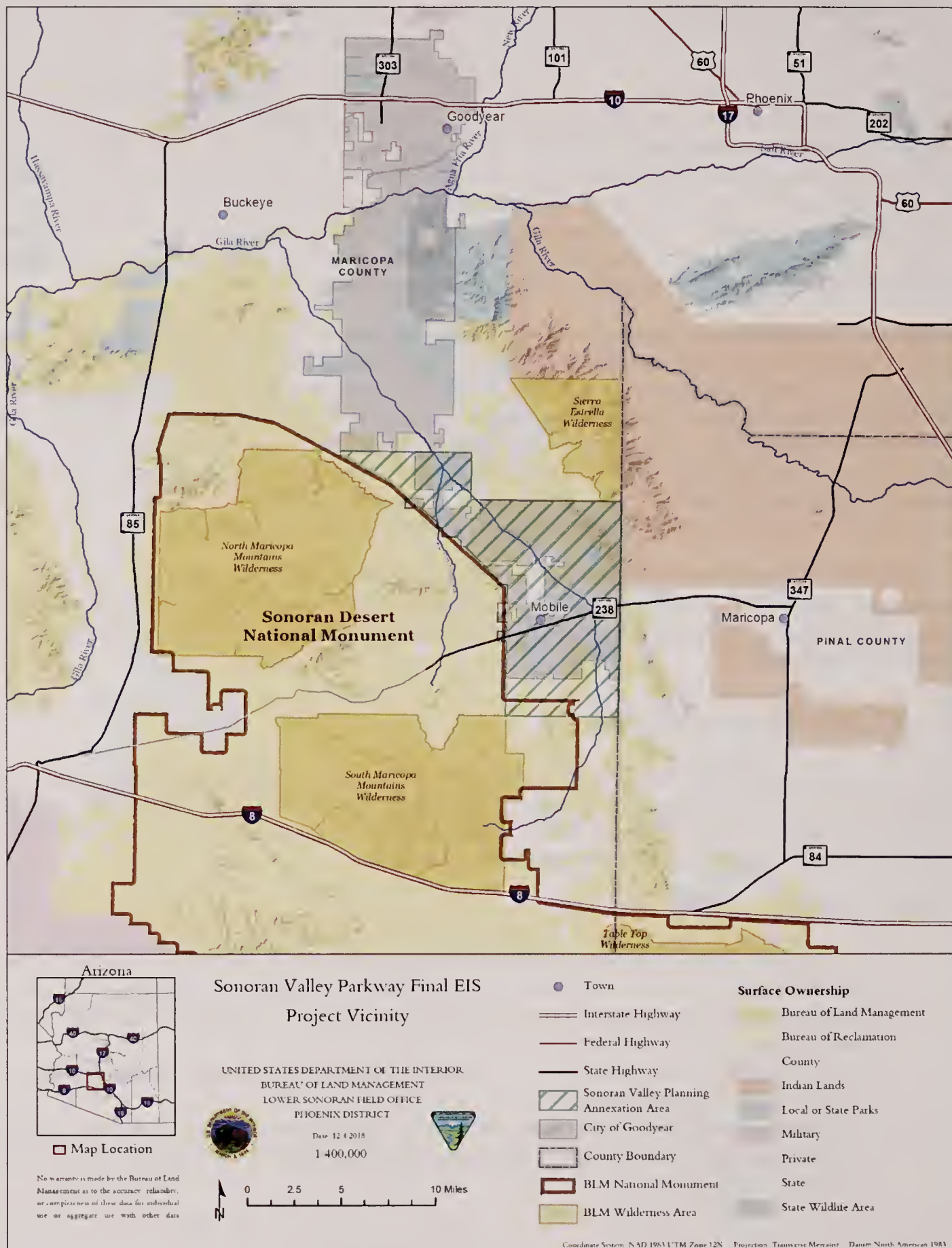


Figure 1-1. Project Vicinity.

1.3 BACKGROUND

The City is located in Maricopa County, approximately 20 miles southwest of Phoenix, Arizona. The City added to its Municipal Planning Area (MPA) an additional 95 square miles known as the SVPA through Resolution 07-1113, passed on January 8, 2007. The 95 square miles that make up the SVPA consist of approximately 9% Arizona State Land Department (ASLD) lands, 40% privately owned land, and 51% BLM-administered lands. In May 2007, the City annexed 67 square miles of its MPA (about 70% of the SVPA) to include lands located adjacent to the City's existing southern planning area boundary (Figure 1-1). The area was previously located within unincorporated Maricopa County.

In response to questions from agencies and the public during the Draft Environmental Impact Statement (DEIS) comment period, the following summary has been added to more thoroughly describe the relationship of transportation plans and mobility in the SVPA. To accommodate growth within the SVPA, the City determined that a major arterial road (the Parkway) would be needed to provide more direct access to residents in the annexed area. At the present time there is no network of roads that provides direct access from the City to Mobile in the SVPA. Travelers and residents use a combination of SR 238, SR 85, SR 347, Interstate (I-) 10, and other local roads for access—lengthening travel time and contributing to congestion on these roadways.

The City's identification of the Parkway derives from a combination of regional and local planning documents that show a strong correlation between forecasted population growth and future transportation need within the SVPA. These broad-based planning efforts establish a vision for the region's future transportation system, define transportation goals and objectives for realizing that vision, and determine a time frame for implementation:

- The Maricopa Association of Governments (MAG) *2040 Regional Transportation Plan* (RTP) (MAG 2017b) accepts the Parkway as an “illustrative” corridor/ROW preservation, according to the recommendations of the I-8/I-10 Hidden Valley Transportation Framework Study (Diagram 1) (MAG 2009), which shows the Parkway as a future road that is currently unfunded.
- In 2006, the City developed the Traffic Analysis Report for the SVPA, which provides an evaluation of expected traffic conditions based on trip generation estimates, given future land uses. The results of this report show more than 1 million trips generated on a typical weekday; the majority are home-based, or generated by residential land uses (City 2006).
- The City Master Transportation Plan accepts the Parkway as a proposed parkway (City 2014b).
- Appendix E and the reports referenced above further describe the relationship of transportation plans and mobility in the SVPA.

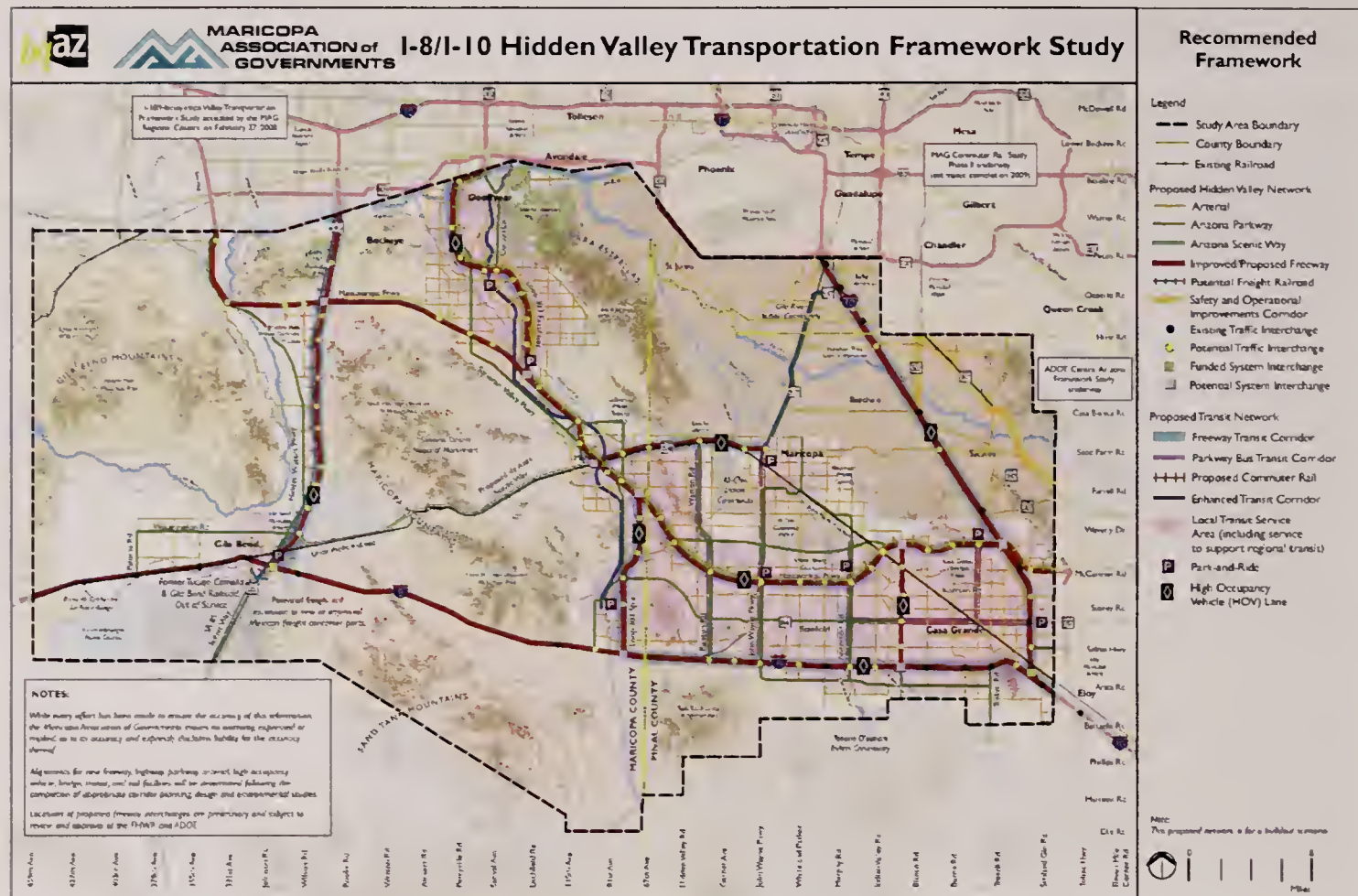


Diagram 1. I-8/I-10 Hidden Valley Transportation Framework Study.

1.4 SCOPE OF THE ANALYSIS

1.4.1 The EIS Decision Framework

This Final EIS analyzes and discloses the environmental impacts of the No Action Alternative, the BLM Preferred Alternative, three action alternatives, and two sub-alternatives (Figure 1-2). The BLM has identified Alternative A, in combination with Sub-Alternative G, as the BLM Preferred Alternative. Figure 1-2 also shows the relationship between the alternatives analyzed in detail and the El Paso Natural Gas (EPNG) multi-use utility corridor. This Final EIS identifies and discloses the impacts and measures to minimize environmental consequences from each action alternative.

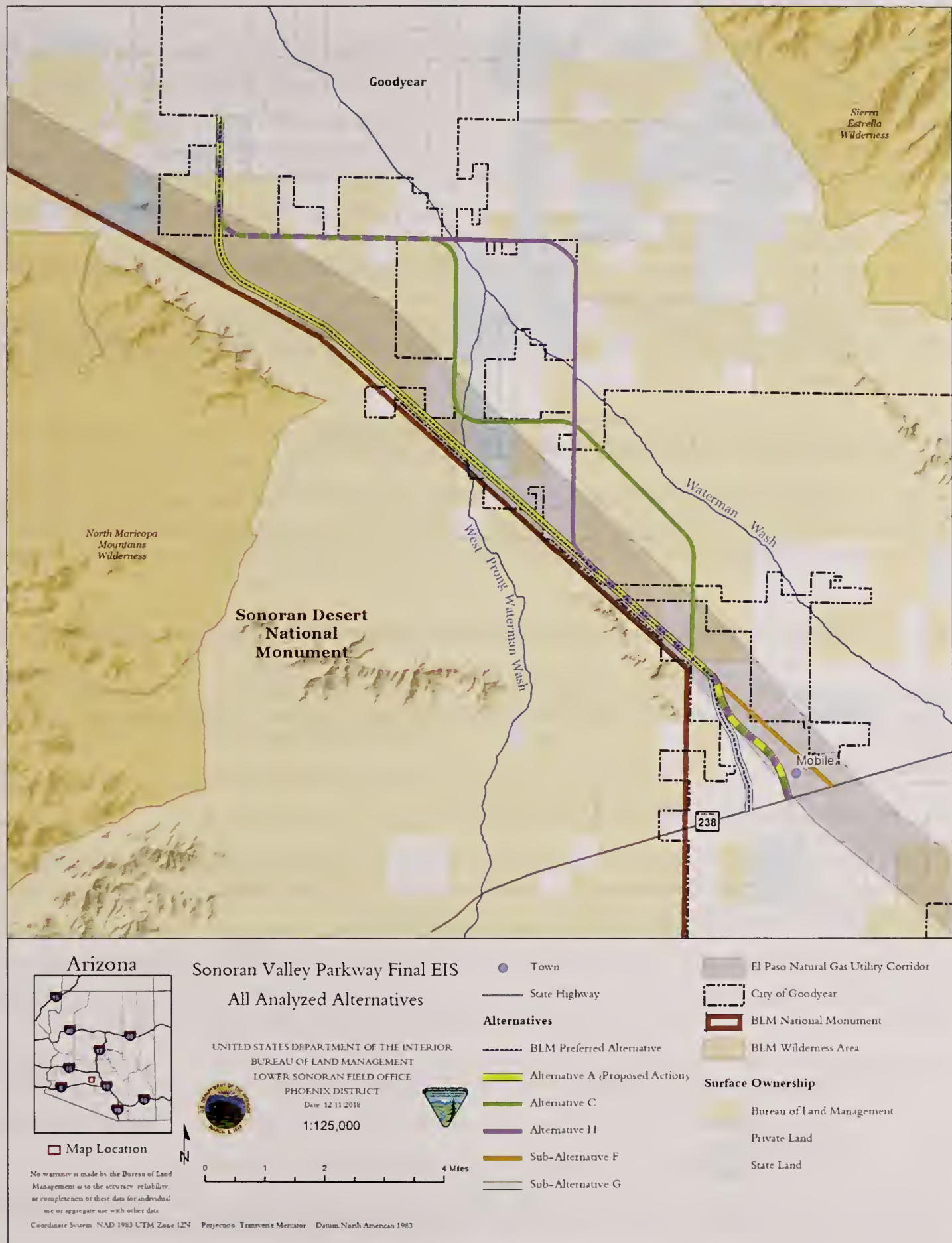


Figure 1-2. All Analyzed Alternatives.

1.4.2 Decisions to Be Made

Decisions made from this Final EIS will be documented in a ROD signed by the Lower Sonoran Field Manager. The BLM decision will apply only to BLM-administered lands. In the ROD, the BLM LSFO Field Manager will determine the following:

- Whether the analysis contained in this Final EIS is adequate to reach an informed decision regarding the ROW application.
- Whether to approve the Proposed Action, select a different alternative, select a combination of alternatives, or deny the ROW request.
- Whether the Proposed Action and alternatives are in conformance with applicable land and resource management plans.
- What the appropriate terms and conditions are (including LSFO best management practices [BMPs], standard operating procedures [SOPs], and monitoring requirements) if the ROW is approved.

1.5 REGULATORY AUTHORITY AND RESPONSIBILITY

The BLM's planning process is governed by the FLPMA (43 USC 1701 *et seq.* and 43 Code of Federal Regulations [CFR] 1600), which governs the administrative review process for most BLM decisions. The BLM's management is guided by numerous other laws and regulations which are summarized in Appendix P.

1.5.1 Conformance with Lower Sonoran Resource Management Plan

Although the Proposed Action and alternatives are not specifically mentioned in the *Lower Sonoran Resource Management Plan* (LSFO RMP) (BLM 2012a), they are consistent with the objectives, goals, and decisions (Appendix P).

1.6 LEAD AND COOPERATING AGENCIES

The BLM is responsible for preparing this Final EIS and the associated analyses, including consultations required by Section 7 of the Endangered Species Act of 1973 (ESA), as amended, and Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Cooperating agencies include those Federal, state, or local agencies that have jurisdiction by law and/or special expertise. Chapter 5 includes a list of agencies invited and those that participated as "cooperating agencies."

1.7 PARTICIPATION PROCESS

1.7.1 Pre-scoping

The BLM and the City hosted three pre-scoping meetings: one on March 11, 2008 in Goodyear, and two on March 12, 2008 in Maricopa and Mobile in order to notify the public about the Parkway.

1.7.2 Scoping

The BLM conducted internal and public scoping to solicit input and to identify the environmental concerns and issues associated with the Parkway. A Notice of Intent (NOI) was published in the *Federal Register* on April 2, 2008. The BLM prepared the *Sonoran Valley Parkway Project Environmental Impact Statement Scoping Report* (Appendix Q). Information obtained during pre-scoping and scoping was used to determine issues and develop alternatives for analysis (40 CFR 1501.8) for this Final EIS. Issues raised and identified during scoping, including those issues that are not addressed in detail in this Final EIS, are summarized in the following sections.

1.7.2.1 Public Issues Identified for Analysis

The following table provides a summary of environmental and other issues identified by members of the public and by groups who submitted comments during the scoping period (April 2, 2008 through June 13, 2008) for the EIS (Table 1-1).

Table 1-1. Summary of Public Issues Identified for Analysis

Alternatives	Alignment should not preclude future development of proposed Loop 303 and/or I-11.
	Consider alternative that connects to the existing Estrella Parkway.
	Consider mass transit alternative.
	Initially construct the Parkway as an unpaved road to provide quick access.
Air Quality	The Parkway will exacerbate air quality problems in area.
	Pollution (ozone [O ₃]) from traffic presents danger to public health. The Parkway would lead to increased O ₃ in the Phoenix metropolitan area.
Cultural Resources	Record historical sites found and display artifacts in a local museum.
Livestock Grazing Management	Mitigation for livestock grazing interests and range improvement projects should be provided by the City.
Noise	Traffic noise should not be audible to recreationists in North Maricopa Mountains Wilderness Area.
Public Health and Safety	The Parkway is essential to provide timely emergency services (i.e., fire, police, and ambulance) to residents of Mobile.
Recreation	The Parkway would lead to an increase in unauthorized recreational off-highway vehicle traffic in the SDNM, which would be harmful to soils, plant life, and animals.
Social and Economic Conditions	The Parkway would provide a viable transportation route for students from Mobile to attend high school in the City of Buckeye schools, thus providing higher-quality education options.
Transportation/Access	The Parkway should function in concert with future high-capacity roadways in the region.
	The Parkway would contribute to increased suburban sprawl and traffic congestion.
Vegetation	The Parkway would harm sensitive plant species.
Visual Resources	The Parkway would increase refuse along the Parkway from garbage trucks traveling to/from the landfill.

Table 1-1. Summary of Public Issues Identified for Analysis (continued)

Wildlife	The Parkway would adversely affect wildlife; critical wildlife movement would lead to increased road kills, fragmentation of habitat, and reduction in biodiversity.
	The Parkway would lead to increased noise, light, air, and water pollution from traffic and would increase the risk of introduction of non-native species, diseases, and parasites.
	Water diversions and future infrastructure needs would further degrade sensitive habitat.

1.7.2.2 Agency Issues Identified for Analysis

Agency management issues identified during the scoping period (Table 1-2).

Table 1-2. Summary of Agency Issues Identified for Analysis

Air Quality	Phoenix metropolitan area is currently in non-attainment for 8-hour O ₃ and PM ₁₀ as promulgated by the National Ambient Air Quality Standards (NAAQS).
	Air quality issues could include increased traffic congestion, construction-related impacts, and long-term usage along alternative routes.
	BLM should coordinate with Maricopa and Pinal counties and State of Arizona to ensure consistency and compatibility with State implementation plan.
Cultural Resources	The EIS must consider the Congressionally designated Juan Bautista de Anza NHT and other historic trails within same corridor.
Hazardous Materials and Public Safety	The EIS should consider that there could be hazardous material concerns along the proposed Parkway if waste management trucks from the Butterfield Station Landfill in Mobile were to inadvertently spread non-biodegradable litter along the road.
Livestock Grazing Management	The EIS should include an evaluation of the effect on existing grazing allotments.
Land Use	The EIS should include an evaluation of the use of the designated EPNG multi-use utility corridor for transportation purposes in light of projected future utility infrastructure needs.
	The EIS should include an evaluation of the effect of the Parkway on current and future BLM realty actions.
Noise	Implementation of any action alternative would lead to increases in noise in project area, both in the long- and short-term. Evaluate presence/absence of sensitive noise receptors and analyze duration and severity of noise impacts.
Recreation	The EIS should include an evaluation of the potential impacts to outdoor and wildlife-related recreation as a result of any changes to public access of BLM-administered public lands that may result from the Parkway.

Table 1-2. Summary of Agency Issues Identified for Analysis (continued)

Social and Economic Conditions	The EIS should include an evaluation of development-related changes in population and demands for public transportation, education, and healthcare services.
	The EIS should include an evaluation of the additional connecting roads between the community of Mobile and the city of Maricopa, which may fuel growth and development in a rural area; will this result in changes to the social dynamics of the local rural population?
	The EIS should include an evaluation of the impact to minority populations.
	The EIS should include an evaluation of the changes in real estate property values, infrastructure and commercial development, recreation activities, and tourism.
Special Designations	The EIS should include an evaluation of impact to nearby wilderness areas and the SDNM, including traffic-related noise.
Soil	The EIS should include an evaluation of impacts to desert terrain (i.e., biological soil crusts).
Transportation and Access	The EIS should include an evaluation of the roadway alignments, existing and future traffic demands, and cumulative impacts to surrounding communities and BLM-administered public lands between the city of Goodyear and newly annexed portions to the south.
Vegetation	The EIS should include an evaluation of impacts to special-status plant species.
	The EIS should include an evaluation of impacts to xeroriparian vegetation, and other vegetation near washes and drainages.
	The EIS should include an evaluation of impacts to threatened or endangered species critical habitat.
Visual Resources	The EIS should include an evaluation of the direct impacts to visual resources both from the Parkway and from the sight of traffic along the road related to recreationists hiking or otherwise exploring the eastern portion of the SDNM.
	The EIS should include an evaluation of BLM Visual Resource Management objectives; the EIS should identify Key Observation Points and use these factors to analyze visual impacts.
Water Resources and Soils	The EIS should include an evaluation of the impacts to water resources and soils, including potential erosion effects associated with this project and the potential for runoff pollutants from vehicles (e.g., oil, gas, and other vehicle fluids) to infiltrate soils and potentially affect both surface water and groundwater.
Wildland Fire Management	The EIS should include an evaluation of the potential for increased incidence of fire from overheated vehicles spreading into areas adjacent to the proposed Parkway, including the SDNM. Due to the negligible impact of this project across all alternatives, this resource was not analyzed in detail.
Wildlife	The EIS should include an evaluation of the potential impacts to special-status species, Arizona Species of Greatest Conservation Need (<i>Arizona State Wildlife Action Plan: 2012–2022</i> [AGFD 2012]), and riparian areas, to include desert wash systems.
	The EIS should include an evaluation of the wildlife movement corridors that cross proposed project alternatives, including road design and placement, arch span design and placement, identification of natural movement corridors, habitat loss, and maintenance of genetic diversity among existing bighorn sheep, mule deer, and other wildlife populations.

The scoping process, comments and summary are documented in the April 2009 Report (Appendix Q).

1.8 PUBLIC REVIEW OF THE DEIS

A Notice of Availability (NOA) was published in the *Federal Register* on July 19, 2013, initiating a 45-day comment period ending September 3, 2013. At the request of members of the public, the comment period was extended to September 20, 2013. Specifics on the public's participation on the DEIS are located in Appendix Q.

1.8.1 Changes and Responses to Comments

BLM received over 100 individual comments on the DEIS. Comments and responses are located in Appendix Q. Revisions to the DEIS based on public comments have been incorporated into this FEIS. In addition, in order to meet the intent of Secretarial Order 3355 "Streamlining National Environmental Policy Act Reviews and Implementation of Executive Order 13807," the BLM has further revised the document removing redundant and extraneous information not necessary to support the conclusions of the FEIS.

The Final EIS includes:

- More background information on regional transportation needs and the relationship of other projects to the Parkway.
- A better explanation of the separate phases of the project.
- An updated development scenario.
- An updated environmental analysis.
- The completed PA in accordance with 36 CFR 800.14(b).
- An updated Air Resources section to reflect current policy and guidance (June 2018).
- A 2018 Sonoran desert tortoise survey of the project area showing no indication of tortoise presence (Appendix M).
- New project map to provide clarity of the alternatives.

1.9 CONSULTATION AND COORDINATION

1.9.1 Cooperating Agencies

In April 2012, BLM sent Memorandum of Understanding (MOU) invitations to local municipalities and agencies to establish a formal cooperating agency partnership (Chapter 5).

2 ALTERNATIVES

2.1 DEVELOPMENT OF ALTERNATIVES

This chapter presents the three action alternatives, two sub-alternatives, the No Action Alternative and the BLM Preferred Alternative that were analyzed in detail for this Final EIS:

- Alternative A
- Alternative C
- Alternative H
- Sub-Alternative F
- Sub-Alternative G
- BLM Preferred Alternative (combining part of Alternative A with Sub-Alternative G)
- No Action Alternative

Alternative A (Proposed Action) represents the alignment originally requested by the City (Map Volume, Figure 2-1). Alternative C was developed as an option to avoid as much Federal land as possible (Map Volume, Figure 2-2). Alternative H was developed as an option to maximize access to private lands (Map Volume, Figure 2-3). All three alternatives would include the same construction methods and techniques, with the primary difference being the proposed Parkway length and route. In addition, two sub-alternatives were developed for the alignment at the south end of the Parkway that could be used in combination with any of the primary alternatives. Sub-Alternative F was developed as an option to minimize surface disturbance and to confine the south end of the Parkway to the existing EPNG Pipeline Road. Sub-Alternative G was developed as an option to avoid impacts to cultural and historic resources (Map Volume, Figure 2-4). The BLM has identified portions of Alternative A in combination with Sub-Alternative G as the **BLM Preferred Alternative** (Map Volume, Figure 2-5).

Several other alternatives were identified and considered but were eliminated from detailed analysis (Map Volume, Figure 2-6).

Under the No Action Alternative, the City's request for ROW to construct the Parkway on BLM-administered lands would not be approved.

2.2 CONSIDERATIONS IN DEVELOPING ALTERNATIVES

Established criteria were used to screen the alternatives considered in the DEIS. The criteria were derived from Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations (40 CFR 1502.14) and the BLM NEPA Handbook H-1790-1. Comparing alternatives with the screening criteria is the process used to reduce the number of alternatives subject to detailed environmental evaluation in the Final EIS. Alternative Screening describes all alternatives and their ability to meet the criteria (Appendix J) including:

- Purpose of and need for the Parkway
- Land use objectives for the LSFO RMP
- Public and agency scoping
- Federal, State, and local laws, regulations and policies
- Technical and economic feasibility
- Regional Transportation Plan

Alternative screening also considered measures to avoid or minimize impacts to the following:

- Water (surface and groundwater)
- Riparian zones and vegetation
- Wildlife and special-status species
- Livestock grazing
- Cultural resources
- Public safety
- Visual resources

2.3 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Under all action alternatives, the City would comply with all applicable Laws, Ordinances, Regulations, and Standards (LORS) and would obtain and meet the requirements of all needed permits, design features, and BMPs and SOPs from the LSFO RMP (Appendix P).

2.4 FEATURES COMMON TO ALL ACTION ALTERNATIVES

The Arizona Parkway concept described in the MAG long-range transportation planning documents was selected as the best type of transportation facility to service urban-rural transition areas with anticipated high traffic volume. The Parkway was identified within the MAG RTP (MAG 2014a, 2015, 2017b) as a Parkway/ROW candidate and Preservation candidate road because of its location and the functional need in this area. The roadway characteristics of a parkway include higher vehicle capacity, reduced travel times, decreased air emissions, and less potential for accidents due to limited traffic conflict points (e.g., turn-bays, traffic intersections, etc.).

2.4.1 Parkway Design Features

Parkway design features are based on Maricopa County Department of Transportation (MCDOT) Design Guidance Recommendations, Enhanced Parkway Study, Arizona Parkway Intersection/Interchange Operational Analysis and Design Concept Study guidance (MCDOT 2008a). In this Final EIS, Parkway design guidance was used to assist in alternatives screening and decision-making. MCDOT's design guidance outlines minimum standards and recommendations. Actual Parkway design may require departure from the design guidance due to site-specific requirements or environmental conditions (e.g., topography, drainage conditions, engineering constraints, etc.), detailed engineering designs have not been completed. Preliminary engineering plans are available (Appendix E).

The Parkway is designed to be an arterial road for enhanced traffic flow, safety, capacity, and access in urban-rural transition areas. Parkways are typically designed to accommodate a greater volume of faster-flowing traffic by reducing the number of intersections and dedicated turn lanes. They also include a landscaped median that provides an increased aesthetic appeal in urban-rural transition areas through vegetative shielding and ground cover. Table 2-1 provides a summary of the Parkway design characteristics and criteria, which are based on MCDOT parkway design guidelines.

Table 2-1. Sonoran Valley Parkway Design Characteristics and Criteria

Parkway length	Alternative A: approximately 16 miles
	Alternative C: approximately 18 miles
	Alternative H: approximately 18 miles
	Sub-Alternative F: approximately 3 miles
	Sub-Alternative G: approximately 2 miles
	BLM Preferred Alternative: approximately 15 miles total
ROW width	Total ROW = 250 feet (200 feet plus 25-foot-wide drainage easements on both sides of ROW centerline)
Parkway width	Two lanes Total Parkway width = 44 feet (28-foot-wide paved surface with 8-foot-wide graded shoulders) Four lanes Total Parkway width (including median) = 200 feet (Two 28-foot-wide paved surfaces [two lanes in each direction] with 8-foot-wide graded shoulders separated by a 112-foot median) Six lanes Total Parkway width (including median) = 200 feet (Two 42-foot-wide paved surfaces [three lanes in each direction] with 8-foot-wide graded shoulders separated by an 84-foot median)
Parkway material and structural section	Asphalt over aggregate base per geotechnical engineer's recommendations
Parkway design speed (all action alternatives)	65 mph
Parkway posted speed (all action alternatives)	55 mph
Drainage design criteria	In accordance with BLM, City, ASLD, and MCDOT requirements
Parkway longitudinal slopes	2.0% maximum 0.3% minimum
Parkway cross slope	5.0% maximum 2.0% minimum
Short-term construction ROWs and easements*	Alternative A: approximately 2 acres Alternative C: approximately 2 acres Alternative H: approximately 2 acres
Construction access road	20-foot-wide graded road

* Short-term construction ROWs and easements are proposed in areas that would be common to Alternatives A, C, and H.

The construction road would be posted “Closed to Public Use” to help prevent unauthorized use of the construction access road. The 20-foot-wide construction access road will be reclaimed after Phase I construction. These are a part of all action alternatives and would be implemented by the City (Appendix R).

2.4.1.1 Lighting

Surface lighting for the Parkway may be included in the final design for each phase in accordance with City recommendations. All surface lighting would be designed to be in keeping with the Maricopa County Dark Sky Ordinance as stated in Section 1112 of the Maricopa County Zoning Ordinance (Maricopa County 2017) and Article 10 of the City of Goodyear’s Zoning Ordinance (City 1999).

2.4.1.2 Right-of-Way Fencing

Fencing along the Parkway will be developed by the City and approved by the BLM, depending on requirements for wildlife, livestock, safety, and restrictions for access. Standard BLM ROW fencing would be applied on both sides of the ROW for the entire length of the Parkway.

2.4.1.3 Wildlife Funnel Fencing

Funnel fencing (exclusion fences) will be included on all wildlife crossings. All arch span-types will include exclusion fences in order to be effective. A minimum height of 7 feet from ground level to the top of the fence would be required to accommodate all mammals of the area. The funnel fencing would be the length of the Parkway where it passes through the linkage area; the length of the funnel would be determined on a case-by-case basis. All exclusion fences would include small mammal–sized fencing material on the lower portions of the fence.

2.5 PHASED CONSTRUCTION

Construction of the Parkway is expected to occur in phases beginning with a two-lane road, which would allow the City to provide access and services to the SVPA. Additional construction (i.e., up to six lanes) is expected to take place over many years based on the City’s future needs and capabilities. The analysis in Chapter 4 fully addresses the environmental impacts of constructing Phase I (two-lanes of the Parkway), and includes consideration, based on current information, of up to four additional lanes if needed in the future. The timeframe for the phased construction is unknown and dependent on demands within the SVPA. Expansion beyond a two-lane Parkway would require further authorizations from the BLM and would be subject to additional environmental review.

Phase 1 (Initial)

- Analyzed in this Final EIS;
- A two-lane road (Diagram 2);
- Construction 20-foot wide construction access road;
- No U-turn crossovers;
- No median;
- Would accommodate 24,000 vehicles per day;
- Approximately 32-months to complete;
- Reclaim the construction access road.

Phase 2 (may also be combined with Phase 3)

- May require additional environmental review;
- A four-lane parkway (Diagram 3);
- Installation of median;
- No U-turn crossovers;
- Approximately 24-months to complete.

Phase 3 (if needed)

- May require additional environmental review;
- A six-lane parkway (Diagram 3);
- Median;
- Installation of U-turn crossovers;
- Would accommodate 72,000 vehicles per day;
- Approximately 18-months to complete.



Diagram 2. Two Lane Parkway Representation.

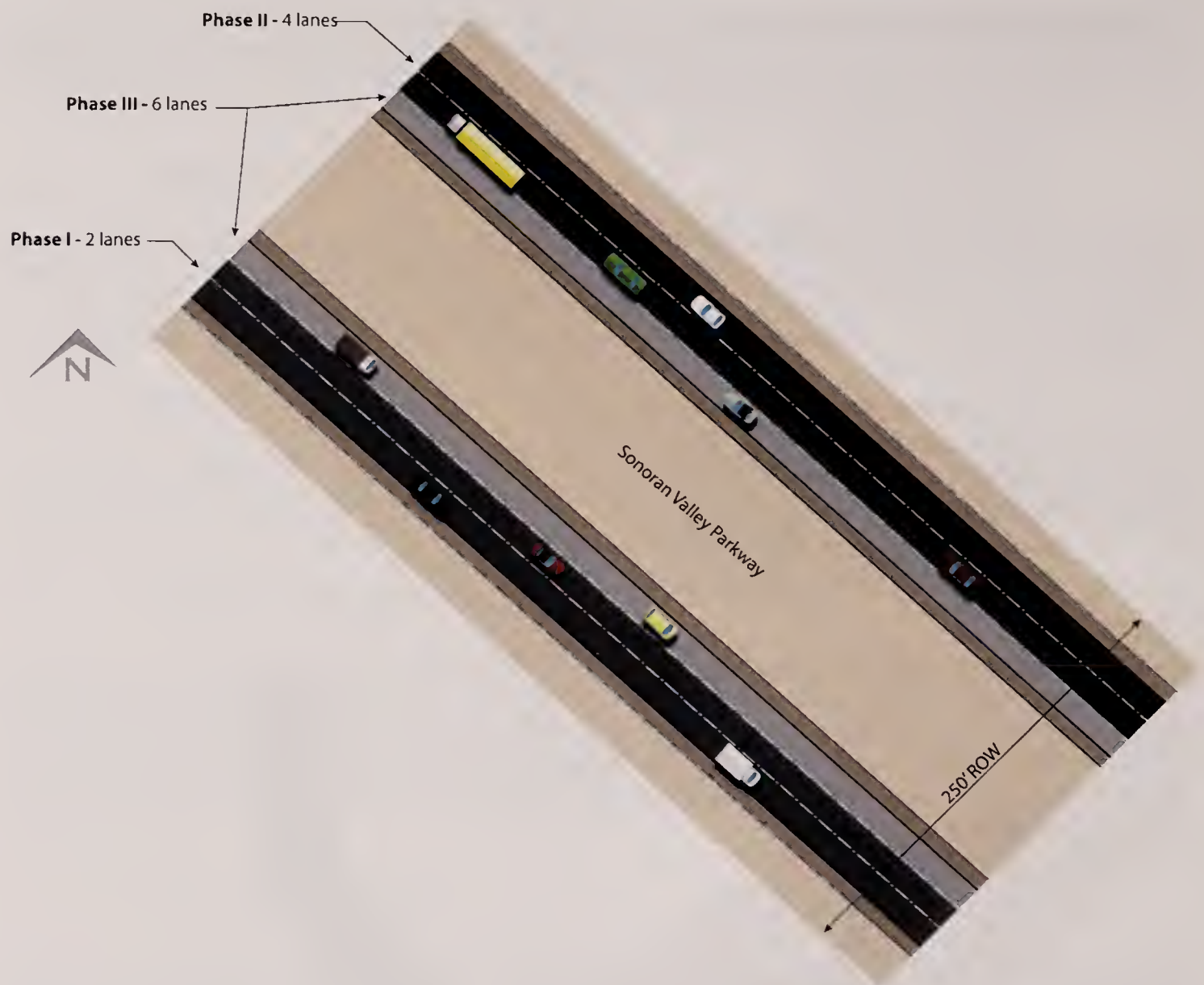


Diagram 3. Two-, Four-, Six-Lane Representation.

2.5.1 Phased Construction Design Features

2.5.1.1 Construction Access Road

During the Phase I construction, a 20-foot wide construction access road will be graded within the 250-foot ROW. This will occur concurrently while the two-lanes are undergoing construction and the construction access road will be parallel to the footprint for the two-lanes. Upon completion of the Phase I construction, the access road would be closed, reseeded, and revegetated so that it could return to a natural state.

2.5.1.2 Drainage

Final design for each phase would be based on recommendations from the *Drainage Policies and Standards for Maricopa County, Arizona* (Maricopa County 2016a) and the *Roadway Design Manual* (MCDOT 2018). Parkway drainage structures would be completed in final engineering, based on drainage conditions and patterns, peak flows, topography, and impacts to floodplains and wash crossings.

According to the *Sonoran Valley Road Final Drainage Report* (Final Drainage Report) (V3 Companies of Arizona, Ltd. [V3] 2007), the project area is located in an area that receives shallow sheet flow and

channelized runoff during large storm events. The Parkway would be designed to the extent possible, to preserve the existing energy conditions of the watershed by maintaining a shallow sheet flow condition. In maintaining the sheet flow conditions, the major and minor washes in this area should not experience a major change in velocity and scour conditions, which could adversely impact the waterways.

To manage the off-site flows directed to the site from the south, two types of crossings have been incorporated into the proposed vertical alignment of the Parkway. The first crossing type consists of a dip section in the proposed vertical alignment. These crossings are used in areas in which water crosses the Parkway in a shallow sheet flow type of conveyance that does not have a well-defined stream or channel associated with the flow. The dip sections were analyzed as a weir, and are designed to have a weir crest length long enough to keep the 100-year peak discharge at a maximum depth of 0.50 foot above the pavement. By keeping the depth across the pavement at 0.50 foot, an all-weather crossing can be maintained in these dip section crossings. The dip sections are constructed so that they protect the Parkway from being undermined by the crossing flow. A 2-foot-wide concrete apron, followed by 10 feet of riprap erosion protection, is incorporated on the upstream and downstream side of the Parkway in order to provide both infiltration and deceleration of sheet flow entering and exiting the pavement.

The second type of crossing would be located at more defined washes, which convey concentrated and higher-magnitude flows. These crossings incorporate the use of concrete culverts into the vertical alignment of the Parkway. At these locations, the peak discharges for the 100-year storm event would be conveyed beneath the Parkway with a maximum of 0.50 foot of overtopping. Wash crossings will be designed as either a low-water crossing (dip section), standard culvert (a cylindrical aluminum corrugated pipe), or an arch span-type culvert. The arch span-type culverts are intended to facilitate wildlife movement and maintain existing drainage patterns. Details on facilities designed to accommodate wildlife movement are included in Appendix D. Wash crossings are based on preliminary engineering (30%) plans. The exact location and dimensions of wash crossings would be determined by the City in accordance with BLM standards. The dimensions of these dip sections and culverts are presented in Tables 2-2, 2-3, and 2-4 below.

2.5.1.3 Curbing/Gutters

Curbs are used on the edges of parkways in urban settings, whereas rural areas typically do not require curbing but rather a thickened edge treatment. Maricopa County design standards require 2-foot shoulders with edge treatments on rural roads. American Association of State Highway and Transportation Officials (AASHTO) recommends non-vertical curb (or gutter) on facilities with a design speed of greater than 45 mph. The Parkway will likely have curbing along the median, except for at the directional crossovers.

2.5.1.4 Intersections and Cross-Overs

Typical parkway intersections (Arizona Parkway Design) would be in accordance with MCDOT parkway design guidance (Appendix K). Final design and engineering based on specific conditions for Phase 2 and 3 of the Parkway will determine the exact configuration of its intersections. When fully built (four- or six-lanes), the Parkway would include signalized intersections and prohibited left turns at cross-street intersections. Left turns would be made through indirect U-turns at crossovers located immediately beyond the intersection. Parkway design would allow for enhanced traffic safety and increased intersection capacity by limiting intersections and traffic stops and eliminating acceleration and deceleration lanes and turn bays.

2.5.1.5 Wildlife Crossings within the Estrella Mountains to SDNM Wildlife Movement Corridor

The LSFO RMP (BLM 2012a) designated the Estrella Mountains to SDNM Wildlife Movement Corridor. Wildlife-enabled arch span-type culverts would be constructed within this corridor to facilitate roadway

permeability for larger mammals such as mule deer and bighorn sheep. Dimensions and measurements of the wildlife-enabled arch span-type culverts would be determined during final design for each phase. The selection of an action alternative will determine their precise location within the Estrella Mountains to SDNM Wildlife Movement Corridor.

2.5.1.6 Traffic Control and Signalization

Signing is a critical element of Parkway design, particularly in instances where directional crossovers occur (i.e., non-signalized U-turns). U.S. Department of Transportation standards recommend multiple regulatory signs at each crossover, major intersections, approaches, traffic interchanges, and Parkway-to-arterial connections.

A detailed signing configuration in keeping with the AASHTO and MCDOT requirements for parkways will be included in the final design and engineering for each phase. Signal length, spacing, and progression will be included in the final design and engineering for each phase. However, parkways are characterized by fewer signals (spaced 0.5 mile or more) to allow greater traffic speeds and improve traffic flow. Signalized (versus signed) directional crossovers may be considered in final design for each phase.

2.6 BLM PREFERRED ALTERNATIVE (ALTERNATIVE A, SUB-ALTERNATIVE G)

The BLM's Preferred Alternative is a Parkway approximately 15 miles in length; it is a combination of the northernmost 13 miles of Alternative A and 2 miles of Sub-Alternative G (Map Volume, Figure 2-5). It would cross approximately 15 miles: 10 miles of BLM-administered land, 1 mile of ASLD land, and 4 miles of private land. Public input generated from scoping meetings indicated support for the BLM Preferred Alternative. The BLM Preferred Alternative was designed to avoid impacts to the Lung Homestead site and minimize impacts to the Mobile Elementary School by relocating the terminus approximately one mile west of the Proposed Action.

2.6.1 Alternative A—Proposed Action

Alternative A was developed by the City and represents the Proposed Action, providing the most direct and efficient connection, which is essential for emergency services to the newly annexed Sonoran Valley area (Map Volume, Figure 2-1). It would cross approximately 16 miles: 10 miles of BLM-administered land, 1 mile of ASLD land, and 5 miles of private land. Compared to the preferred alternative, Alternative A is 1 mile longer, crosses more private land, and impacts cultural resource sites. Public input generated from scoping meetings indicated support for Alternative A.

2.6.2 Sub-Alternative G

Sub-Alternative G, approximately 2 miles long (Map Volume, Figure 2-4), was developed by the BLM to avoid known historic and cultural resources, and the EPNG Pipeline Road, while maintaining access to the Butterfield Overland Stage Route and Anza NHT. It would provide a different alignment and replace approximately 2 miles of Alternative A, C, or H on the southern portion of the Parkway.

2.6.3 Intersections with Existing Roads

The BLM Preferred Alternative and Alternative A would provide a primary connection from Rainbow Valley Road at the northern terminus to SR 238 at the southern terminus. Final engineering and design would determine the configuration of the traffic interchanges to accommodate average daily entering volumes from existing roads.

Four potential traffic interchanges were considered:

- Patterson Road
 - South Bullard Avenue
- West Kumatke Road
 - 170th Avenue

2.6.4 Wash Crossings and Short-term Construction ROWs

As shown in Table 2-2, there are 35 wash crossing anticipated for the BLM Preferred Alternative and 39 wash crossings are anticipated for Alternative A.

Table 2-2. BLM Preferred Alternative: Low-Water Crossings and Culverts, Arch Span-Type Culverts, and Short-Term Construction ROWs and Easements

Feature	BLM Preferred	Alternative A	Sub-Alternative G	Approximate Dimensions
	Amount Proposed	Amount Proposed	Amount Proposed	
Low-water Crossing	15	19	0	200–1,600 linear feet
Culvert	17	17	0	2- to 6-foot openings
Arch Span-Type Culvert (Wildlife Crossing)	3	3	0	Minimum of 12 feet high
Short-term construction ROWs	2	2	0	250 × 250 feet
Short-term construction ROW	1	1	0	25 x 800 feet
Short-term construction easements	2	1	1	25 x 800 feet

Source (BLM 2018)

2.7 OTHER ALTERNATIVES ANALYZED

2.7.1 No Action Alternative

Under the No Action Alternative, the City’s ROW application to develop the Parkway would not be approved. Without the project, the projected increase in traffic volumes would occur on area roadways such as SR 85 and SR 238 and access for emergency services, residents, and commuters would remain unchanged, limited, and unimproved. The No Action Alternative conflicts with the regional transportation recommendations stated in the MAG 2040 RTP (2017), which provides for a parkway corridor to meet travel demand from Goodyear to SR 238. The No Action Alternative forms the baseline against which the potential impacts of the action alternatives are compared.

2.7.2 Alternative C

Alternative C, approximately 18 miles (Map Volume, Figure 2-2), was developed to distance the Parkway from the SDNM. It crosses approximately 12 miles of BLM-administered land, 1 mile of ASLD land, and 5 miles of private land. It follows the existing Patterson Road and Bullard Avenue to eliminate the need for new construction on ASLD lands and private inholdings. It would parallel Waterman Wash within a half mile, which would require design features to minimize impact from the wash flooding during monsoons.

This alternative contains multiple sharp turns and curves and does not align with the EPNG multi-use utility corridor.

Public comment indicated concerns regarding the construction of an alignment that could harm sensitive wildlife or riparian areas. Alternative C would avoid several of these concerns by using existing ROW and reducing surface disturbance.

Characteristics of Alternative C include the following:

- Redirects noise and visual impacts away from the SDNM.
- Splits multiple pastures and would result in areas without water sources; additional water sources (subject to separate environmental analysis) may be required for continued grazing.
- Longer than Alternative A and the BLM Preferred Alternative.

2.7.2.1 *Intersections with Existing Roads*

Alternative C would provide a connection from the West Patterson Road alignment at the northern terminus to SR 238 at the southern terminus.

Four potential traffic interchanges were considered:

- South Bullard Avenue
- 135th Avenue
- 115th Avenue alignment
- 170th Avenue

Connection to SR 238 and potential connections to Loop 303 would be explored during final design for each phase.

2.7.2.2 *Wash Crossings and Short-term construction ROWs*

As shown in Table 2-3, 44 wash crossings are anticipated for Alternative C.

Table 2-3. Alternative C: Low-Water Crossings and Culverts, Arch Span-Type Culverts, and Short-term Construction ROWs

Feature	Amount Proposed	Approximate Dimensions
Low-water Crossing	30	200–1,200 linear feet
Culvert	12	2- to 6-foot openings
Arch Span-Type Culvert (Wildlife Crossing)	2	Minimum of 12 feet high
Short-term construction easements	1	25 × 800 feet

2.7.3 **Alternative H**

Alternative H (Map Volume, Figure 2-3), approximately 18 miles: 8 miles of BLM-administered land, 4 miles of ASLD land, and 6 miles of private land. It provides access to the private holdings and 26 acres of

BLM-administered lands that have been identified for disposal or exchange. It would not parallel Waterman Wash, but cross the wash in numerous locations with culverts to avoid impacts. This alternative contains multiple sharp turns and curves and does not align with the EPNG multi-use utility corridor.

Characteristics of the Alternative H:

- Redirects noise and visual impacts away from the SDNM.
- Provides access to BLM-administered lands identified for disposal.
- Avoids paralleling the biological and hydrologic resources of Waterman Wash and its tributaries.
- Longer than Alternative A and the BLM Preferred Alternative.

2.7.3.1 *Intersections with Existing Roads*

Alternative H would provide a connection from the West Patterson Road alignment at the northern terminus and SR 238 at the southern terminus.

Six potential traffic interchanges were considered:

- South Bullard Avenue
- Two interchanges at 135th Avenue
- Unnamed primitive road
- West Komatke Road
- 170th Avenue

Connection to SR 238 and potential connections to Loop 303 would be explored during final design for each phase.

2.7.3.2 *Wash Crossings and Short-term construction ROWs*

As shown in Table 2-4, 40 wash crossings are anticipated for Alternative H.

Table 2-4. Alternative H: Low-water Crossings and Culverts, Arch Span-Type Culverts, and Short-Term Construction ROWs

Feature	Amount Proposed	Approximate Dimensions
Low-water Crossing	29	200–1,200 linear feet
Culvert	8	2- to 6-foot openings
Arch Span-Type Culvert (Wildlife Crossing)	3	Minimum of 12 feet high
Short-term construction ROWs	1	250 × 250 feet
Short-term construction ROWs	1	25 x 800 feet
Short-term construction easements	1	25 x 800 feet

2.7.4 Sub-Alternative F

Sub-Alternative F (Map Volume, Figure 2-4), approximately 3 miles, was developed to avoid known historic and cultural resources, and the (EPNG) Pipeline Road, while maintaining access to the Butterfield Overland Stage Route and Anza NHT. It would provide a different alignment and replace approximately 2 miles of Alternative A, C, or H on the southern portion of the Parkway. This alternative would pass directly through the Butterfield Station Landfill, an active municipal solid waste landfill, and would require relocation of approximately 5 acres of the landfill.

2.8 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The BLM considered nine other alternatives, but eliminated them from detailed analysis (Map Volume, Figure 2-6). Appendix J discusses each of the alternatives and the rationale for why they were eliminated from detailed analysis.

2.8.1 Rainbow Valley Road Connection

This alternative is economically infeasible because it would require extensive design features to facilitate the extension construction of Rainbow Valley Road, which does not currently have any design, plans, or mobility objectives in place.

2.8.2 State Route 303L Connection

The future development surrounding Rainbow Valley is unknown. Therefore, any design and engineering would be speculative. The City is not the responsible agency for SR 303L; ADOT is the responsible agency.

2.8.3 Combining the Parkway with Future Planned Roads

Combining the Parkway with future planned roads was eliminated from further analysis because it would not be effective at accomplishing the City's need to provide a major arterial Parkway for traffic seeking connectivity of the SVPA to the City and access to the Phoenix metropolitan area.

2.8.4 Gas Line Road

The gas line road was eliminated from further analysis because the costs of designing, locating, and relocating existing utilities would render this alternative technically and economically infeasible due to the amount of work required to prepare the gas line road for a parkway.

2.8.5 Alternative B

Alternative B was eliminated from further analysis because it would have substantially similar effects as Alternative C and, while substantially similar in design, would have increased potential for impacts to water resources, vegetation, riparian areas, and wildlife.

2.8.6 Alternative D

Alternative D was eliminated from further analysis because it does not address public and agency scoping comments, and would be technically and economically infeasible compared with Alternative A or C.

2.8.7 Alternative E

Alternative E was eliminated from further analysis because it is technically and economically infeasible, compared with Alternative A or C, and would not provide any additional environmental benefits. This Alternative would be located near Waterman Wash and would require extensive design features to facilitate surface water flow, wildlife corridors, flood prevention designs, and engineering constraints.

2.8.8 Sub-Alternative H1

Sub-Alternative H1 was eliminated from further analysis because it is substantially similar in design to Alternatives C and H, and does not follow existing routes and would result in greater surface disturbance.

2.8.9 Sub-Alternative H2

Sub-Alternative H2 was eliminated from further analysis because it is substantially similar in design to Alternatives C and H, and was designed to provide access to private land.

2.9 SUMMARY OF EFFECTS

The Summary of Effects Table (Table 2.5) provides a summary and comparison of the effects analyzed in Chapter 4 of this Final EIS, to the extent that the effects for each resource are reasonably foreseeable. When effects are not considered reasonably foreseeable (e.g. air resources), the impacts are not quantified. This table assumes implementation of PA, BMPs, applicable design features, and SOPs (Appendices P and R). The comparison of these effects includes effects that are common to all action alternatives. *All measurements are approximate.*

For comparison purposes, sub-alternatives F and G are options that could replace the southernmost three miles of alternatives A, C, and H. The resources found in the area and the types of impacts to those resources are generally the same for sub-alternatives F and G and the southernmost three miles of alternatives A, C, and H. For most resources, the change in effects between the replaced portions of Alternatives A, C, and H and sub-alternatives F and G are negligible, with sub-alternative F being slightly longer and effecting slightly more acres and sub-alternative G being slightly shorter and effecting slightly fewer acres. Where the effects are appreciably different between the southernmost three miles of alternative A, C, and H and either sub-alternative F or G, those differences are described in Table 2-5.

Table 2-5. Summary of Effects

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Air Resources	No change to existing conditions anticipated.	<p>Based on the length of approximately 16 miles long and the AADT, the maximum VMT is:</p> <p>Two lane – 377,280</p> <p>Anticipated to meet the stated goals and objectives of the Goodyear 2025: City of Goodyear General Plan (City 2014a), the City Transportation Master Plan (City 2014b), the MAG RTP (MAG 2017b), and the State Implementation Plan via Federal statute (40 CFR 51). Construction activity may generate temporary increase in Mobile Source Air Toxics emissions.</p> <p>The impact for potentially sensitive receptors would be long-term but negligible. The operation may result in indirect air quality impacts to existing and planned receptors if the Parkway creates land use amendments brought on by development interest. Future development would increase the proximity of the improved roadway network to existing and planned receptors in the project area, creating the potential for increases in local CO and PM10 concentrations.</p>	<p>Same as Alternative A with the following exception:</p> <p>Based on the length of approximately 18 miles long and the AADT, the maximum VMT is:</p> <p>Two lane – 434,880</p>	<p>Same as Alternative A with the following exception:</p> <p>Based on the length of approximately 18 miles long and the AADT, the maximum VMT is:</p> <p>Two lane – 434,880</p>	The slight shift in location of sub-alt F compared to the southernmost 3 miles of Alternatives A, C and H results in no different impacts	The slight shift in location of sub-alt G compared to the southernmost 3 miles of Alternatives A, C and H results in no different impacts	Based on the length of approximately 15 miles long and the AADT, the maximum VMT is the same as Alt. A.

Table 2.5 Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Cultural and Heritage Resources	No change to existing conditions anticipated	Permanently impact:	Permanently impact:	Permanently impact:	Located entirely on Private Land	Located entirely on Private Land	Lung Homestead avoided
		1 acre of AZ T:15:94(ASM)					
		4 acres of Lung Homestead	4 acres of Lung Homestead	4 acres of Lung Homestead	Lung Homestead avoided	Lung Homestead avoided	Permanently impact:
		331 linear feet of the Butterfield Overland Stage Route	331 linear feet of the Butterfield Overland Stage Route	331 linear feet of the Butterfield Overland Stage Route	Permanently impact:	Permanently impact:	278 linear feet of the Butterfield Overland Stage Route
		28 acres of Anza NHT corridor.	28 acres of Anza NHT corridor.	28 acres of Anza NHT corridor.	342 linear feet of the Butterfield Overland Stage Route	278 linear feet of the Butterfield Overland Stage Route	28 acres of Anza NHT corridor.
		Minor impacts to the Komatke Trail from connectivity restrictions.	Minor impacts to the Komatke Trail from connectivity restrictions.	Minor impacts to the Komatke Trail from connectivity restrictions.	32 acres of Anza NHT corridor.	28 acres of Anza NHT corridor.	Minor impacts to the Komatke Trail from connectivity restrictions.

Table 2.5 Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Soil Resources	No change to existing conditions anticipated	Direct or indirect impacts to the general topography of the project area, such as elevation and overall slope, would not occur under any variant of the project alternatives. Under Alternative A, short-term disturbance would result in a conversion from natural soils (as well as dirt roads and a small amount of farmland) to a graded and otherwise disturbed construction corridor. Direct impacts would result from clearing of vegetation, grading, and compaction. Long-term impacts to soils would include the loss of soil productivity within the transportation corridor due to preclusion of access to the soil. Long-term disturbance of soils would occur, resulting in a conversion from natural soils (as well as dirt roads and a small amount of farmland) to a Parkway.	Same as Alternative A with the following exception:	Same as Alternative A with the following exception:	Type of effect would be the same as Alternative A and not affected by the slight shift in length and location of the alternative with the following exception:	Type of effect would be the same as Alternative A and not affected by the slight shift in the length and location of the alternative with the following exception:	Same as Alternative A with the following exception:
			250 ft ROW: Short-term Impacts - 44 acres	250 ft ROW: Short-term Impacts - 45 acres			250 ft ROW: Short-term Impacts - 37 acres
			Long-term Impacts - 548 acres	Long-term Impacts - 556 acres	250 ft ROW: Short-term Impacts - 7 acres	250 ft ROW: Short-term Impacts - 6 acres	Long-term Impacts - 472 acres
			Total Disturbed Area - 592 acres	Total Disturbed Area - 601 acres	Long-term Impacts - 84 acres	Long-term Impacts - 72 acres	Total Disturbed Area - 509 acres:
			Two-lane Parkway: Short-term Impacts - 44 acres	Two-lane Parkway: Short-term Impacts - 45 acres	Total Disturbed Area - 91 acres:	Total Disturbed Area - 78 acres	Two-lane Parkway: Short-term Impacts - 37 acres
			Long-term Impacts - 96 acres	Long-term Impacts - 97 acres	Two-lane Parkway: Short-term Impacts - 7 acres	Two-lane Parkway: Short-term Impacts - 6 acres	Long-term Impacts - 82 acres
			Total Disturbed Area - 140 acres	Total Disturbed Area - 142 acres	Long-term Impacts - 15 acres	Long-term Impacts - 13 acres	Total Disturbed Area - 119 acres
			250 ft ROW: Short-term Impacts - 37 acres		Total Disturbed Area - 22 acres	Total Disturbed Area - 19 acres	
			Long-term Impacts - 476 acres				
			Total Disturbed Area - 513 acres				
		Two-lane Parkway: Short-term Impacts - 37 acres					
		Long-term Impacts - 82 acres					
		Total Disturbed Area - 119 acres					

Table 2.5 Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Vegetation Resources*	No change to existing conditions anticipated.	Under Alternative A, all impacts to vegetation are considered long-term impacts and would include the loss of vegetation within the transportation corridor due to clearing and possible change in the vegetation community with the potential for the establishment of invasive species. 250 ft ROW: Long-term Impacts - 476 acres and 0.97 miles Two-lane Parkway: Long-term Impacts - 82 acres and 0.19 miles	Same as Alternative A with the following exception: 250 ft ROW: Long-term Impacts - 548 acres and 0.88 miles Two-lane Parkway: Long-term Impacts - 96 acres and 0.15 miles	Same as Alternative A with the following exception: 250 ft ROW: Long-term Impacts - 556 acres and 1.14 miles Two-lane Parkway: Long-term Impacts - 97 acres and 0.18 miles	Type of effect would be the same as Alternative A and not affected by the slight shift in the length and location of the alternative with the following exception: 250 ft ROW: Long-term Impacts - 84 acres and 0.15 miles Two-lane Parkway: Long-term Impacts - 15 acres and 0.03 miles	Type of effect would be the same as Alternative A and not affected by the slight shift in the length and location of the alternative with the following exception: 250 ft ROW: Long-term Impacts - 72 acres and 0.12 miles Two-lane Parkway: Long-term Impacts - 13 acres and 0.02 miles	Same as Alternative A with the following exception: 250 ft ROW: Long-term Impacts - 472 acres and 0.91 miles Two-lane Parkway: Long-term Impacts - 82 acres and 0.16 miles
Visual Resources	No change to existing conditions anticipated.	Would be consistent with the objectives of Visual Resource Management (VRM) Class IV objectives for the 283 acres of BLM-administered land within the project area.	Would be consistent with the objectives of Visual Resource Management (VRM) Class IV objectives for the 314 acres of BLM-administered land within the project area.	Would be consistent with the objectives of Visual Resource Management (VRM) Class IV objectives for the 242 acres of BLM-administered land within the project area.	Is located entirely outside of BLM-administered lands and is not subject to visual resource guidance.	Is located entirely outside of BLM-administered lands and is not subject to visual resource guidance.	Would be consistent with the objectives of Visual Resource Management (VRM) Class IV objectives for the 283 acres of BLM-administered land within the project area.

Table 2.5 Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Water Resources	No change to existing conditions anticipated.	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>39 long-term impacts due to wash crossings (to maintain natural drainage and flow velocities).</p> <p>FEMA Floodplains Long-term Impacts, Entire 250 ft ROW (acres):</p> <p>15 (BLM)</p> <p>9 (Private)</p> <p>5 (State)</p> <p>29 Total</p> <p>FEMA Floodplains Long-term Impacts Two-lane Parkway (acres):</p> <p>3 (BLM)</p> <p>2 (Private)</p> <p>1 (State)</p> <p>6 Total</p>	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>44 long-term impacts due to wash crossings (to maintain natural drainage and flow velocities).</p> <p>FEMA Floodplains Long-term Impacts, Entire 250 ft ROW (acres):</p> <p>32 (BLM)</p> <p>10 (Private)</p> <p>2 (State)</p> <p>44 Total</p> <p>FEMA Floodplains Long-term Impacts Two-lane Parkway (acres):</p> <p>6 (BLM)</p> <p>1 (Private)</p> <p>0 (State)</p> <p>7 Total</p>	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>40 long-term impacts due to wash crossings (to maintain natural drainage and flow velocities).</p> <p>FEMA Floodplains Long-term Impacts, Entire 250 ft ROW (acres):</p> <p>19 (BLM)</p> <p>13 (Private)</p> <p>11 (State)</p> <p>43 Total</p> <p>FEMA Floodplains Long-term Impacts Two-lane Parkway (acres):</p> <p>2 (BLM)</p> <p>4 (Private)</p> <p>2 (State)</p> <p>8 Total</p>	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>No long-term impacts from wash crossings, no crossings present.</p>	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>No long-term impacts from wash crossings, no crossings present.</p>	<p>Impacts to groundwater quantity are considered negligible under all alternatives and sub-alternatives.</p> <p>35 long-term impacts due to wash crossings (to maintain natural drainage and flow velocities).</p> <p>FEMA Floodplains Long-term Impacts, Entire 250 ft ROW (acres):</p> <p>15 (BLM)</p> <p>5 (Private)</p> <p>5 (State)</p> <p>25 Total</p> <p>FEMA Floodplains Long-term Impacts Two-lane Parkway (acres):</p> <p>3 (BLM)</p> <p>1 (Private)</p> <p>1 (State)</p> <p>5 Total</p>

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Wildlife and Special-Status Species	No change to existing conditions anticipated	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:475</p> <p>Special-Status Species Habitat:475</p> <p>Wildlife Connectivity/Corridors: 82 (BLM) 107 (Private) 13 (State) 202 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:122</p> <p>Special-Status Species Habitat:122</p> <p>Wildlife Connectivity/Corridors: 14 (BLM) 19 (Private) 2 (State) 35 Total</p> <p>A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).</p>	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:549</p> <p>Special-Status Species Habitat:549</p> <p>Wildlife Connectivity/Corridors: 152 (BLM) 75 (Private) 0 (State) 227 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:141</p> <p>Special-Status Species Habitat:141</p> <p>Wildlife Connectivity/Corridors: 28 (BLM) 12 (Private) 0 (State) 40 Total</p>	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:554</p> <p>Special-Status Species Habitat:554</p> <p>Wildlife Connectivity/Corridors: 105 (BLM) 103 (Private) 0 (State) 208 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:141</p> <p>Special-Status Species Habitat:141</p> <p>Wildlife Connectivity/Corridors: 25 (BLM) 13 (Private) 0 (State) 38 Total</p>	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:84</p> <p>Special-Status Species Habitat:84</p> <p>Wildlife Connectivity/Corridors: 0 (BLM) 40 (Private) 0 (State) 40 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:22</p> <p>Special-Status Species Habitat:22</p> <p>Wildlife Connectivity/Corridors: 0 (BLM) 7 (Private) 0 (State) 7 Total</p>	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:72</p> <p>Special-Status Species Habitat:72</p> <p>Wildlife Connectivity/Corridors: 0 (BLM) 47 (Private) 0 (State) 47 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:19</p> <p>Special-Status Species Habitat:19</p> <p>Wildlife Connectivity/Corridors: 0 (BLM) 8 (Private) 0 (State) 8 Total</p>	<p>Impacts to general and special-status wildlife species habitat are considered moderate under all alternatives and sub-alternatives</p> <p>Impacts, Entire 250 ft ROW (acres): General Wildlife Habitat:471</p> <p>Special-Status Species Habitat:471</p> <p>Wildlife Connectivity/Corridors: 82 (BLM) 113 (Private) 13 (State) 208 Total</p> <p>Impacts Two-lane Parkway: General Wildlife Habitat:121</p> <p>Special-Status Species Habitat:121</p> <p>Wildlife Connectivity/Corridors: 14 (BLM) 20 (Private) 2 (State) 36 Total</p>

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Wildlife and Special-Status Species (Continued)			A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).	A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).	A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).	A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).	A 2018 survey of the project area found no indication that Sonoran desert tortoise were using the area (Appendix M).
Lands and Realty	No change to existing conditions anticipated.	No anticipated impacts to electrical transmission or oil/gas pipeline existing land use authorizations. No impact to mineral entry, commercial or industrial land uses, or airports. May indirectly increase land tenure and development of Rainbow Valley through infrastructure improvement.	Same as Alt A.	Same as Alt A.	Type of effect would be the same as Alternative A and not affected by the shift in the length and location of the alternative, however, Sub-Alternative F would pass directly through the Butterfield Station Landfill, an active municipal solid waste landfill, and would require mitigations to relocate approximately 5 acres of occupied landfill.	Type of effect would be the same as Alternative A and not affected by the shift in the length and location of the alternative.	Same as Alt A.

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Livestock and Grazing	No change to existing conditions anticipated.	<p>Direct impacts to livestock grazing are considered permanent under all alternatives and sub-alternatives of the 250 ft ROW:</p> <p>297 acres of Belloat allotment unavailable for grazing and reduction of 4 AUMs on BLM administered lands</p> <p>178 acres of Conley allotment unavailable for grazing and reduction of 3 AUMs on BLM administered lands</p> <p>Total – 475 ac 7 AUMs</p>	<p>Direct impacts to livestock grazing are considered permanent under all alternatives and sub-alternatives of the 250 ft ROW:</p> <p>431 acres of Belloat allotment unavailable for grazing and reduction of 6 AUMs on BLM administered lands</p> <p>118 acres of Conley allotment unavailable for grazing and reduction of 1 AUMs on BLM administered lands</p> <p>Total – 549 ac 7 AUMs</p>	<p>Direct impacts to livestock grazing are considered permanent under all alternatives and sub-alternatives of the 250 ft ROW:</p> <p>380 acres of Belloat allotment unavailable for grazing and reduction of 4 AUMs on BLM administered lands</p> <p>174 acres of Conley allotment unavailable for grazing and reduction of 2 AUMs on BLM administered lands</p> <p>Total – 554 ac 6 AUMs</p>	Located entirely on Private Land 84 acres of Conley allotment unavailable for grazing	Located entirely on Private Land 72 acres of Conley allotment unavailable for grazing	<p>Direct impacts to livestock grazing are considered permanent under all alternatives and sub-alternatives of the 250 ft ROW:</p> <p>297 acres of Belloat allotment unavailable for grazing and reduction of 4 AUMs on BLM administered lands</p> <p>102 acres of Conley allotment unavailable for grazing and reduction of 3 AUMs on BLM administered lands</p> <p>-</p> <p>Total – 399 ac 7 AUMs</p>
Recreation Management	No change to existing conditions anticipated.	<p>The loss of recreational opportunities within the ROW are irreversible and irretrievable, this would be a minor loss due to the reduced the size of lands available for dispersed recreation (public lands not designated as Recreation Management Areas [RMAs])</p> <p>283 acres of BLM administered land would be unavailable to accommodate the construction and maintenance of the Parkway</p>	<p>Same as Alt A, however:</p> <p>318 acres of BLM administered land would be unavailable to accommodate the construction and maintenance of the Parkway.</p>	<p>Same as Alt A, however:</p> <p>247 acres of BLM-administered land would be unavailable to accommodate the construction and maintenance of the Parkway.</p>	Is located entirely outside of BLM-administered lands and is not subject to recreation management guidance.	Is located entirely outside of BLM-administered lands and is not subject to recreation management guidance.	Same as Alt A.

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Travel Management	No change to existing conditions anticipated.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area. The type of effect would not be affected by the shift in the length and location of the alternative.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area. The type of effect would be not affected by shift in the length and location of the alternative.	All alternatives and sub-alternatives would provide long-term benefits to motorists and residents as emergency response vehicles and utility-related traffic would have improved access to this area.
		3 miles of Maricopa County roads would be upgraded under Alternative A, starting at Riggs Road and heading south along Rainbow Valley Road.	9 miles of county roads would be converted to Parkway, including parts of Rainbow Valley, Patterson Road, and Bullard Avenue.	6 miles of county roads would be impacted due to the increased traffic volume on Patterson Road.	No Maricopa County roads would be upgraded.	1 mile of the existing 170th Avenue alignment to its southern terminus at SR 238 would be upgraded.	4 miles of Maricopa County roads would be upgraded for increased use, 3 miles starting at Riggs Road and heading south along Rainbow Valley Road, and 1 mile of the existing 170th Avenue.

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Special Designations	No change to existing conditions anticipated.	<p>Conversion of the existing landscape from a natural setting to a transportation corridor would change the existing viewshed for users of the SDNM. The impact would be limited to the north and east side of the monument and the North Maricopa Mountain Wilderness. Because the Sierra Estrella Wilderness is 10 miles to the east of the proposed Parkway, this distance would reduce the effects of the view, and it is expected that the proposed Parkway would not stand out from the existing development in the area. Topography would also mitigate or eliminate (block) these effects in portions of the adjacent and nearby wilderness areas. The construction and use of the Parkway under all action alternatives would create noise. The increase in construction-related noise would be temporary.</p> <p>Lights required for the Parkway and associated traffic lights would be noticeable. This would have an adverse impact on the recreation setting and experience of SDNM. Traffic would come primarily from Rainbow Valley Road and SR 238.</p> <p>Environmental protection measures considered in the project design for the Anza NHT and Butterfield Overland Stage Route would maintain connectivity.</p>	Same as Alternative A.	Same as Alternative A.	Is located entirely outside of BLM-administered lands and is not subject to special designation guidance.	Is located entirely outside of BLM-administered lands and is not subject to special designation guidance.	Same as Alternative A except the southernmost 2 miles are located entirely outside of BLM-Administered lands.

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Noise	No change to existing conditions anticipated.	<p>The closest residential unit is approximately 2,800 feet, and the closest school is approximately 2,400 feet. The noise levels at 2,400 and 2,800 feet are anticipated to be less than 64 A-weighted decibels (dBA) for all Parkway designs.</p> <p>It is anticipated that the increase in noise levels from existing levels is less than 15 dBA. The impact on noise levels for potentially sensitive receptors would therefore be long-term but negligible.</p> <p>Alternative A may result in indirect impacts to Category B land uses (residential) because future development would increase the proximity of Category B land uses to the improved roadway network in the project area.</p>	Same as Alt A, except for a residential unit that would be at the ROW. The noise level is anticipated to exceed 64 dBA, with a greater than 15 dBA noise level increase from existing noise levels, for this residential unit.	Same as Alt A, except for two residential units that would be at the ROW. The noise level is anticipated to exceed 64 dBA, with a greater than 15 dBA noise level increase from existing noise levels, for this residential unit.	The slight shift in location of sub-alt F compared to the southernmost 3 miles of Alternatives A, C and H results in a residential unit that would be located at the ROW. The noise level is anticipated to exceed 64 dBA, with a greater than 15 dBA noise level increase from existing noise levels, for this residential unit.	<p>The slight shift in location of sub-alt G compared to the southernmost 3 miles of Alternatives A, C and H results in a residential unit that is farther away, approximately 7,500 feet, and the closest school is approximately 6,000 feet. The noise levels at 7,500 and 6,000 feet are anticipated to be less than 64 A-weighted decibels (dBA) for all Parkway designs.</p> <p>It is anticipated that the increase in noise levels from existing levels is less than 15 dBA. The impact on noise levels for potentially sensitive receptors would therefore be long-term but negligible.</p>	<p>Same as Alt A, except there would be two residential units; one is at 2,800 feet, and due slight shift in location of sub-alt G, and one is at 7,500 feet and the closest school is approximately 6,000 feet away in the southernmost 2 miles. The noise levels are anticipated to be less than 64 A-weighted decibels (dBA) for all Parkway designs.</p> <p>It is anticipated that the increase in noise levels from existing levels is less than 15 dBA. The impact on noise levels for potentially sensitive receptors would therefore be long-term but negligible.</p> <p>Alternative A may result in indirect impacts to Category B land uses (residential) because future development would increase the proximity of Category B land uses to the improved roadway network in the project area.</p>

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Hazardous Materials/Public Safety	No change to existing conditions anticipated. The City would not have safe access to its MPA.	Direct or indirect impacts from hazardous materials to surrounding soils, surface water, or groundwater within the project area are not anticipated for any of the phases under this alternative. However, it is likely hazardous materials would be used and stored on site during construction.	Type of effect would be the same as Alternative A and not affected by the length and location of the alternative.	Type of effect would be the same as Alternative A and not affected by the length and location of the alternative.	Type of effect would be the same as Alternative A, except it also passes directly through the Butterfield Station Landfill, an active municipal solid waste landfill.	Type of effect would be the same as Alternative A and not affected by the shift in length and location of the alternative.	Type of effect would be the same as Alternative A and not affected by the shift in length and location of the alternative.

Table 2-5. Summary of Effects (continued)

Resource Section	No Action	Alternative A	Alternative C	Alternative H	Sub-Alt. F	Sub-Alt. G	BLM Preferred Alt.
Social and Economic Conditions	No change to existing conditions anticipated.	<p>Staffing for project construction would provide income to the existing workforce in the region, benefitting in the short-term. The cost of living is not expected to be affected.</p> <p>In the long-term, increased access to the Rainbow Valley area may promote additional travelers to the area, thus increasing sales and lodging tax revenue. It also provides access to new areas for residential and commercial development, thus providing more potential opportunities for income generation.</p> <p>Additional improvement to the housing market in general are expected. Improved access to Rainbow Valley will likely increase the appeal of this area for prospective investors and residents.</p> <p>Development of commercial and industrial centers are planned for Rainbow Valley, and so the Parkway would indirectly improve employment conditions because it would provide increased access from residences to employment centers.</p>	Same as Alternative A	Same as Alternative A	<p>The slight shift in location of sub-alt F compared to the southernmost 3 miles of Alternatives A, C and H results in no different impacts.</p>	<p>The slight shift in location of sub-alt G compared to the southernmost 3 miles of Alternatives A, C and H results in no different impacts.</p>	Same as Alternative A

* The Creosote Bush-White Bursage community is represented in acres based on GAP polygon data. The xeroriparian community is represented in miles based on linear wash features on 100K topographic maps.

3 AFFECTED ENVIRONMENT

This chapter identifies the affected environment and focuses on the existing resources and uses that have the potential to be affected by the Parkway, including both natural and physical resources in the area and the relationships of people to these resources (40 CFR 1508.14). The affected environment is the baseline against which each action alternative is evaluated in terms of impacts to the human environment that would result from its implementation.

3.1 GENERAL SETTING

The three action alternatives and two sub-alternatives for the proposed Parkway are located in Maricopa County, Arizona. The project area stretches between Goodyear and Mobile, through Rainbow Valley (Figure 1-1). The SDNM is directly southwest of the project area. Rainbow Valley is a sparsely populated, undeveloped expanse of land with diverse land ownership, including the BLM, ASLD, and private landowners. Lands in the immediate vicinity of the project area are composed of undeveloped, relatively undisturbed desert across a flat, alluvial plain that is dissected by several drainages. The project area is dominated by creosote flats, although agricultural use exists in the region. There are several utility corridors in use, which include authorizations such as transmission lines, gas lines, and associated access roads.

3.1.1 Resource Values and Uses Brought Forward for Analysis

Based on internal (agency and cooperator) and external (public) scoping, a number of issues and concerns were identified for analysis in this Final EIS (Chapter 1, Section 1.7). The following resources and uses are described in this chapter.

- Air Resources and Climate Change
- Cultural and Heritage Resources
- Soil Resources
- Vegetation Resources
- Visual Resources
- Water Resources
- Wildlife and Special-Status Species
- Lands and Realty
- Livestock Grazing
- Recreation Management
- Travel Management
- Special Designations
- Noise
- Hazardous Materials and Public Safety
- Social and Economic Conditions

3.1.1.1 Overview

The affected environment varies by resource value or use, depending on the geographic extent of the resource or use and the extent of the effects of the action alternatives on a resource or use. In some cases, the affected environment is the project area (i.e., the 250-foot ROW of each action alternative) because that is the anticipated extent of the effects of the project on the resource. In other cases, the affected environment is much larger, encompassing larger administrative or natural boundaries (e.g., Maricopa County or Rainbow Valley), because the effects on the resource extend beyond the project area boundary. The study area for each resource value or use is defined at the beginning of each resource section.

3.2 AIR RESOURCES

Air quality refers to the level of pollutants found in the ambient air. Air pollution is defined as the presence in the atmosphere of natural and artificial substances that affect human health or the well-being of any other specific organism. Air pollution also applies to situations in which contaminants impact structures and

artifacts or esthetic sensibilities (such as visibility or smell). Pollutants are further defined as primary (emitted directly from a source) or secondary (formed in the atmosphere by reactions of primary pollutants). Activities within the air quality study area that may generate emissions of pollutants include, as examples, urban development, agricultural activities, large wildfires, and the use of internal-combustion engines (e.g., recreational use, transportation use, or commuter use).

3.2.1 Study Area

The study area for considering potential impacts to air quality is defined as a 10-mile radius around all action alternatives (Map Volume, Figure 3-1).

3.2.2 National Ambient Air Quality Standards

Based on the adopted NAAQS, the Clean Air Act (CAA) requires that U.S. Environmental Protection Agency (EPA) classify air basins as either *attainment* or *nonattainment* with respect to the criteria pollutants. The classifications are defined below.

- **Attainment Area:** This is a geographic or politically delineated air basin that meets the NAAQS for criteria pollutants.
- **Nonattainment Area:** This is a geographic or politically delineated air basin that does not meet the NAAQS for one or more pollutants. Nonattainment areas/states are required to formulate and submit State Implementation Plans (SIPs) to the EPA that outline the measures the State will implement to attain and maintain the NAAQS.
- **Unclassifiable:** This is an area that lacks sufficient monitoring data. Unclassifiable areas are conservatively managed as though they are in attainment in order to maintain or improve existing air quality.
- **Maintenance Area:** This is an area that was previously classified as a nonattainment area and that has been demonstrated with recent data to have achieved attainment of the NAAQS.

A particular geographic region may be classified as an attainment area for some pollutants and as a nonattainment area for others. The EPA has designated all of Maricopa County as being either in attainment or unclassifiable with respect to the NAAQS for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and PM smaller than 2.5 microns in diameter (PM_{2.5}). Progress in regional air quality improvement in recent years has allowed the county to be designated a maintenance area with respect to carbon monoxide (CO) and 1-hour ozone (O₃) NAAQS. The EPA has designated a large portion of Maricopa County to be a marginal nonattainment area for the more recent NAAQS for 8-hour average O₃. MAG has developed a 2017 Eight-Hour Ozone Moderate Area Plan in order to meet the requirements in Section 182(b) of the CAA and improve air quality in the Maricopa nonattainment area (MAG 2017a). Most of Maricopa County is a nonattainment area for PM from 2.5 to 10 microns in diameter (PM₁₀). Federal agencies have requirements to conduct a conformity reviews that ensure proposed actions conform with existing transportation plans developed to achieve or maintain attainment for the areas. Two primary methods of conformity reviews are transportation conformity and general conformity. Transportation conformity is only applicable for Federal Highway Administration (FHWA) funded and approved projects. A general conformity review was conducted for both the construction and operational phase of the project. Under the general conformity review, emissions fall under the de minimis threshold as defined by EPA. The emissions occurring within the operational phase are consistent with local transportation plans. The NAAQS for particulates and the other five criteria pollutants are presented in Table 3-1.

Table 3-1. National Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
CO	1-hour	35 ppm	N/A
	8-hour	9 ppm	N/A
NO ₂	1-hour	100 ppb	N/A
	Annual	53 ppb	53 ppb
O ₃	1-hour [†]	0.12 ppm	0.12 ppm
	8-hour	0.070 ppm	0.070 ppm
PM ₁₀	24-hour	150 µg/m ³	150 µg/m ³
	Annual [‡]	50 µg/m ³	50 µg/m ³
PM _{2.5}	24-hour	35 µg/m ³	35 µg/m ³
	Annual	12 µg/m ³	15 µg/m ³
SO ₂	1-hour	75 ppb	N/A
	3-hour	N/A	0.5 ppm
Lead	Calendar quarter	0.15 µg/m ³	0.15 µg/m ³

Source: 40 CFR 50

ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter[†] 1-hour standard revoked on June 15, 2005, in Arizona[‡] Annual standard eliminated in January 2006

3.2.3 Particulate Matter

Particulate Matter (PM) is a term used to describe very small solid or liquid particles that vary considerably in size, geometry, chemical composition, and physical properties. Particulates contribute to visibility reduction, pose a threat to public health, and cause economic damage through soil disturbance.

The Maricopa County PM₁₀ nonattainment area is an approximately 48- by 60- mile rectangular section of eastern Maricopa County. The north end of each of the proposed Parkway alignment alternatives lies within the boundaries of the nonattainment area. PM₁₀ exceedances within the designated area occur primarily during stagnant, wintertime, morning conditions.

Control measures, such as Rules 310 and 310.01 of the Maricopa County Air Quality Rules (MCAQR), mainly target construction and maintenance operations known to generate particulates, although primary (freeway and major arterial) and secondary (collector) paved roads are included in the measures. On August 14, 2008, the EPA published in the *Federal Register* (72:47542) a Final Rule effective September 15, 2008, approving 77 Maricopa County rules and measures as best available control measures and most stringent measures. Efforts to reduce dust re-suspended from paved roads have concentrated on eliminating trackout from construction sites, curbing and stabilizing road shoulders, and investigating more efficient street sweepers. Secondary fine particulates have been reduced by vehicular emission controls, which have reduced their precursor gases, and by diesel engine replacement and retirement programs.

3.2.4 Ozone

O₃ is a colorless, slightly odorous gas that increases respiratory rates, pulmonary resistance, and affects lung mechanics. In the stratosphere, O₃ blocks harmful ultraviolet radiation. In the urban atmosphere, its formation leads to concentrations harmful to people, animals, plants, and materials. O₃ is formed from the photochemical reaction (under sunlight) of volatile organic compounds (VOCs) and nitrogen oxides (NO_x). Anthropogenic sources of O₃ precursors include vehicle emissions, motorized equipment, power plants, and service stations.

In 1979, the EPA lowered the level of the O₃ compliance standard from 0.12 to 0.08 parts per million (ppm). In 1997, EPA promulgated a new 8-hour average O₃ standard of 0.08 ppm in addition to the existing 1-hour standard of 0.12 ppm. In 2008, EPA revised the 8-hour standard to a level of 0.075 ppm.

A Final rule was signed on October 1, 2015, and effective December 28, 2015 stating, “The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.” The NAAQS has not yet been attained for the 2008 8-hour O₃ standard of 0.075 ppm within the Maricopa nonattainment area. Under the CAA, the area is classified as a Moderate Area.

Controls to reduce the precursors of O₃ have been successfully implemented for years. NO_x and VOCs from vehicular exhaust have been reduced through engine modifications and three-way catalytic converters. Evaporative hydrocarbons (HCs) from vehicles have been reduced through better-engineered fuel tanks and auxiliary plumbing combined with carbon absorption canisters. Additional reductions of vehicular VOCs have come through the ADEQ vehicle emissions inspection program, which tests all gasoline fueled vehicles for HCs in Phoenix and Tucson, through vapor capturing equipment for gasoline tankers, vapor recovery systems at retail gas stations (Maricopa County area only), and cleaner burning gasoline (Maricopa County area only).

3.2.4 Other Criteria Pollutants

CO is produced in the incomplete combustion of fuels and vehicular emissions are a major source. About half of the CO emissions in Arizona’s metropolitan areas come from on-road motor vehicles. A little less than half of the CO emissions come from off-road vehicles, construction equipment, and lawn and garden equipment. The remaining CO emissions come from point and area sources. NO₂ is a gas with a yellowish orange to reddish brown appearance that impairs respiratory system functioning, reduces visibility, and contributes to the photochemical formation of O₃ in the environment. In the Phoenix area, vehicular emissions are the dominant source of this pollutant, with major contributions from power plants (ADEQ 2017). SO₂ is a colorless gas with a strong, irritating odor at high concentrations that affects the mechanical function of the upper airway, especially the nasal passages. In Arizona, the principal source of SO₂ is smelting of sulfide copper ore (ADEQ 2017). Other sources are the combustion of sulfur-containing fuels by vehicles and power plants. Lead and its compounds damage the cardiovascular, renal, and nervous systems. Sources of lead include lead-based paint, water from lead pipes, household dust and soil that come in contact with lead, and vehicular emissions associated with the use of leaded gasoline. The Phoenix metropolitan area is in attainment for these remaining criteria pollutants.

Benzene is listed as a Mobile Source Air Toxic under the CAA, which is a compound emitted by highway vehicles and non-road equipment. It is present in fuel and emitted to the air when the fuel evaporates or passes through the engine unburned.

3.2.5 Ambient Criteria Pollutant Levels in the Study Area

The Maricopa County Air Quality Division (MCAQD) and the ADEQ maintain a network of air quality monitoring sites throughout Maricopa County; the majority of these sites are located in Phoenix and the surrounding communities.

The closest MCAQD-operated station is located in Buckeye, near the intersection of SR 85 and Buckeye Road (Site #21525). The Buckeye site represents a rural air quality monitoring location and is surrounded by agriculture and encroaching residential development, and is most likely representative of existing air quality conditions in the study area. A summary of the most recent monitoring data collected at this site for CO, O₃, and PM₁₀ is presented in Table 3-2; CO and O₃ are measured in ppm, NO₂ in parts per billion (ppb), and PM₁₀ is measured in microgram per cubic meter (µg/m³) (MCAQD 2017). The site does not record concentrations of PM_{2.5}. The monitoring data for the Buckeye air quality-monitoring site indicates that there were no exceedances of the NAAQS for NO₂ or CO at the MCAQD monitoring site.

Table 3-2. Air Quality Data from the Buckeye Monitoring Site (2015–2017)

Location*	Pollutants	Averaging Time	Compliance Value	Number of Exceedances (for site)
Buckeye (26449 West 100th Drive)	CO	1 hour	—**	0
		8 hours	0.6†	0
	NO ₂	1 hour	32.3 §	0
		Annual	7.71***	0
	PM ₁₀	24 hours	177‡	2 [§]
	O ₃	8 hours	0.070††	2

Source: MCAQD 2017

Operated by MCAQD.

** The 2017 report indicates that this value is no longer included because it has been significantly lower than the NAAQS levels for many years

† Value represents the highest monitored value over the most recent 2-year period.

‡ Value represents the 3-year average of the highest yearly value over the most recent period (2015–2017).

§ Value represents the 3-year average of the 98th percentile (2105–2017).

*** Value represents the annual average.

[§] Estimated number of exceedances of the NAAQS for this criteria pollutant for all three monitoring years (2015–2017), with the average estimated number of exceedances per year in parentheses. These exceedances are flagged as exceptional events.

†† Value represents the 3-year average of the annual fourth-highest monitored value over the most recent period (2015–2017).

PM₁₀ data at the Buckeye station were collected using the tapered element oscillating microbalance instrument method. To demonstrate compliance with the PM₁₀ 24-hour standard, the maximum 24-hour monitored average must not exceed the primary and secondary standards of 150 µg/m³ more than once per year averaged over any 3 consecutive years. The monitored maximum 24-hour average ambient PM₁₀ concentration at this station was 124 µg/m³ in 2015, 153 µg/m³ in 2016, and 177 µg/m³ in 2017. There were two exceedances of the 24-hour PM₁₀ standard (150 µg/m³) in 2017, and none in 2015 and 2016; this was an average of less than one exceedance per year for the 2015 to 2017 period. All of these exceedances have been flagged by ADEQ as being caused by dust storms resulting from high-wind exceptional events. Exceedances caused by exceptional events, such as high winds, do not count as exceedances toward a NAAQS when concurred with by EPA (MCAQD 2017).

There are three PM_{2.5} monitors near the project area. Two are located in Maricopa County, and one is located in Pinal County. The two Maricopa County monitors are the Durango Complex and West Phoenix sites, which are near major roadways. The Maricopa County sites have reported eight exceedances (two in 2015, one in 2016, and five in 2017) at West Phoenix Site and five exceedances at the Durango Complex—two in 2016 and three in 2017 of the 24-hour (35 µg/m³) or annual standard (12 µg/m³). The West Phoenix and Durango Complex monitors reported a 3-year (2015–2017) average ninety-eighth percentile 24-hour PM_{2.5} concentration value of 30.2 and 30.6 µg/m³, respectively (MCAQD 2017). The Apache Junction Fire Station monitor in Pinal County is surrounded by agricultural sources. EPA has determined that the Apache Junction Fire Station monitor is ineligible for comparison with the annual PM_{2.5} standard as the monitor functions as a population-oriented microscale (i.e., localized hot spot) monitor (*Federal Register* 76:6056). Thus, the Apache Junction Fire Station monitor is only eligible for comparison with the 24-hour PM_{2.5} standard. The Apache Junction Fire Station monitor reported a 3-year (2015–2017) average ninety-eighth percentile 24-hour PM_{2.5} concentration value of 5.5 µg/m³.

3.2.6 Climate Change

Climate change is a global phenomenon that results from global greenhouse gas (GHG) emissions. GHGs are chemical compounds in the Earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the Earth's surface, trapping heat. Climate change may be affected by numerous factors, including solar radiation, ocean circulation, and human activities (EPA 2012a). There are no sites within the study area that are collecting ambient GHG data. Ambient background data that exist are parametrically derived from fossil fuel combustion and other industrial sources.

Activities within the air quality study area that may generate emissions of climate changing pollutants (i.e., carbon dioxide [CO₂], methane [CH₄], and N₂O) include, as examples, urban development, agricultural activities, large wildfires, and the use of internal-combustion engines (e.g., recreational use, transportation use, or commuter use). According to the inventory for Arizona, the GHG emissions for reporting year 2020 were estimated at 153.5 million metric tons of carbon dioxide equivalent (CO₂e) (CCS 2005).

3.3 CULTURAL AND HERITAGE RESOURCES

Cultural resources are defined as specific locations of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, and architectural sites, structures, and places with traditional cultural or religious importance within a social or cultural group.

3.3.1 Study Area

The study area for cultural and heritage resources is defined as the 3-mile radius around all action alternatives (Map Volume, Figure 3-2). The 3-mile radius was used to capture the extent of the larger cultural landscape.

3.3.2 Identification of Cultural Resources

Identification efforts included a records review of previously conducted cultural resources projects in and near the area of potential effects (APE) as described in the five alternatives, historical map research, pedestrian field survey of Alternatives A and C, and consultation with Native American tribes.

A cultural resources survey was conducted, and identified cultural properties were then evaluated using the criteria in 36 CFR 60.4 to assess whether they were eligible for listing in the National Register of Historic Places (NRHP).

The records review, map research, and in-field survey of Alternatives A and C took place in 2008 and 2009 (Hedquist et al. 2009; Sheehan et al. 2008; SWCA Environmental Consultants [SWCA] 2014). The survey included conducting a record review to identify prior work and previously recorded cultural resources, followed by an in-field survey of the ROW for Alternatives A and C. Six cultural sites were identified along the proposed Alternative A and C corridors. Of these six cultural sites, two (Lung Homestead and the Butterfield Overland Stage Route) were determined eligible for listing in the NRHP. Two historic properties are located on private lands, and one cultural site is located on BLM-administered lands: the Butterfield Overland Stage Route, the remnants of the Edison R. Lung Homestead, and a small prehistoric Hohokam food processing and procurement site. Two properties are located along Alternative C. All three properties are located along Alternative A.

Sub-Alternative G was surveyed in 2008 for the proposed Amaranth housing development on private land (Sheehan et al. 2008). The remaining 2.93 acres was surveyed in 2014 (SWCA 2014). The sub-alternative does cross the assumed alignment of the Butterfield Overland Stage Route; no other cultural resources are found within the Sub-Alternative G alignment.

Alternatives H and Sub-Alternative F have not been fully surveyed for cultural resources. Approximately 147 acres along Alternative H had been previously surveyed (Hedquist et al. 2009; Sheehan et al. 2008); approximately 76 acres, of Sub-Alternative F had been surveyed (Sheehan et al. 2008). However, it is known that the Butterfield Overland Stage Route crosses all the alternatives and sub-alternatives. If Alternative H and Sub-Alternative F were selected, additional cultural resource inventories may be required in accordance with the executed PA.

The Butterfield Overland Stage Route has been assigned Arizona State Museum (ASM) site number AZ T:15:94(ASM), and the SHPO has previously determined it eligible for listing in the NRHP. Within the APE, the route consists of a dirt road that shows minimal evidence of modern use. The Butterfield Overland Stage Route is currently undergoing a feasibility study by the NPS for consideration as a National Historic Trail (NHT).

The Lung Homestead has been assigned site number AZ T:15:11 (ASM). This property has the potential to provide important information about the early settlement of Mobile and homesteading in the Little Rainbow Valley.

AZ T:15:94(ASM) is a small prehistoric artifact scatter of ceramics, flaked stone, and ground stone. This site may contain information on prehistoric use and subsistence in the Rainbow Valley. Although this site is currently treated as eligible, testing of this site will be needed to verify the supposition of eligibility.

In addition to the Butterfield Overland Stage Route and the remains of the Lung Homestead, the Anza NHT also crosses the study area. The designated trail corridor crosses all of the alternative corridors just south of the Butterfield Overland Stage Route.

3.3.3 Native American Religious Concerns

The Little Rainbow Valley is within the cultural landscape of several Native American tribes. The Akimel O'odham have two reservations only a few miles to the east of the valley and consider this area part of their traditional territory. Several other tribal groups, including the Hopi, Pee Posh, and Tohono O'odham, have ancestral claims to the project area.

The BLM hosted a field trip to the Parkway for Ak-Chin Indian and Gila River Indian Community representatives and the primary purpose for the trip was to familiarize field trip attendees with the Rainbow Valley area and, in particular, the setting of the proposed project and its relationship to the Estrella Mountains. BLM hosted a second field trip to the Espanto Mountains near the proposed Parkway, for Ak-

Chin Indian Community and Gila River Indian Community members. The purpose of the field trip was to visit a petroglyph site in the SDNM and its relationship to the Parkway. Another reason for the site visit was to ensure that the Komatke Trail historic corridor would be addressed in efforts to identify and evaluate traditional places based on the songscape between the Sierra Estrella Mountains and Rainbow Valley, and points west.

Ak-Chin Indian Community and Gila River Indian Community members identified two sensitive sites of traditional and religious importance: a traditional use area and a traditional travel corridor and its related songscape. The traditional use area is a petroglyph site located on the east side of the SDNM, within the APE for indirect effects.

3.4 SOIL RESOURCES

The scope of the analysis for topography, geology, and soils includes a review of available data relevant to the scope of the project within the study area.

3.4.1 Study Area

The study area for soil associations is defined as the 250-foot ROW for all action alternatives (Map Volume, Figure 3-3), and geologic units as the entire Rainbow Valley (Map Volume, Figure 3-4).

3.4.2 Topography

The Parkway lies entirely within the Rainbow Valley Sub-Basin, a large, valley-wide creosote flat. The project area slopes toward the north and northeast. The project area is flat, with an approximate elevation variation of only 230 feet along the length of the project. Elevations range from approximately 1,100 to 1,330 feet above mean sea level. Numerous unnamed desert washes cross the project corridor from the southwest to northeast, flowing toward Waterman Wash, which then flows along Rainbow Valley toward the northwest, parallel with the project. The project area is included in the area covered by the Mobile and Mobile Northeast, Arizona, 7.5-minute U.S. Geological Survey (USGS) topographic maps dated 1964 through 1983.

3.4.3 Geological Setting

The Parkway is located in the valley between the Maricopa Mountains to the southwest and the Sierra Estrella Mountains to the northeast. In a larger context, the project is located in the western portion of the Salt River Valley, which is a broad, northeast-southwest-trending alluvial basin characterized by varying degrees of subsurface consolidation (Hammett and Herther 1995). Depth to bedrock in the western Salt River Valley ranges from less than 10 feet near the margins to more than 10,000 feet southeast of Gilbert (Arizona Department of Water Resources [ADWR] 1994). The predominant surface geology is late Cenozoic (quaternary) alluvial deposits.

The Salt River Valley is bounded by steep mountain ranges composed of igneous, metamorphic, and sedimentary rocks of Precambrian (more than 600 million years old) to Tertiary (63 million to 2 million years old) age (Arizona Bureau of Mines 1960). The basin is filled primarily with unconsolidated to indurated Tertiary and Quaternary (1.5 million years ago to the present day) sedimentary deposits, with lesser amounts of intercalated evaporites and volcanic rocks.

3.4.4 Soils

A review of soils data from the Natural Resources Conservation Service (NRCS) (2007) indicates that the project transects many low-sloped, sandy to gravelly loam components. Existing NRCS soil surveys for the project area consist of the Gila Bend-Ajo Area (AZ653) and Maricopa County (AZ651). Soils in the project area are almost exclusively those formed in alluvial processes, including alluvial fans, fan terraces, stream terraces, basin and relict basin floors, and stratified stream and fan alluvium. This is consistent with the project's location within a broad valley. Some generalizations can be made about soils on the project area. Soils are dominated by very deep, well-drained soils. Deeper soils consist of gravelly sandy loams with depths to bedrock greater than 60 inches below the surface. Table 3-3 provides a summary of the identified soil series transected by the project.

Table 3-3. Soil Associations within the Study Area

Soil Series	Description	Notes
Agualt	Very deep, well-drained soils formed in stratified stream or fan alluvium.	-
Antho	Very deep, somewhat excessively drained soils formed in mixed and stratified alluvium. Antho soils are on alluvial fans and flood plains and have slopes of 0% to 5%.	-
Brios	Very deep, excessively drained soils that formed in mixed and stratified alluvium. Brios soils are on floodplains and alluvial fans and have slopes of 0% to 5%.	-
Coolidge	Very deep, well-drained soils formed in fan or stream alluvium. Coolidge soils are on fan terraces, stream terraces, or relict basin floors. Slopes are 0% to 5%.	-
Cuerda	Very deep, well-drained soils formed in stratified alluvium. Cuerda soils are on alluvial fans and floodplains and have slopes of about 1%.	-
Dateland	Very deep, well-drained soils formed in stream or fan alluvium and eolian deposits. Dateland soils are on stream terraces, fan terraces, or relict basin floors. Slopes are 0% to 8%.	-
Denure	Very deep, somewhat excessively drained soils formed in fan or stream alluvium. Denure soils are on relict basin floors, stream terraces, or fan terraces and have slopes of 0% to 8%.	-
Estrella	Very deep, well-drained soils that formed in stratified mixed alluvium. Estrella soils are on alluvial fans and have slopes of 0% to 5%.	-
Gilman	Very deep, well-drained soils that formed in stratified stream alluvium. Gilman soils are on floodplains and alluvial fans and have slopes of 0% to 3%.	-
Gunsight	Very deep, somewhat excessively drained, strongly calcareous soils that formed in alluvium from mixed sources. Gunsight soils are on fan terraces or stream terraces and have slopes of 0% to 60%.	-
Harqua	Very deep, well-drained soils formed in fan alluvium from mixed sources. Harqua soils are on relict basin floors, fan terraces, or stream terraces and have slopes of 0% to 10%.	-
Laveen	Very deep, well-drained soils that formed in mixed fan alluvium. Laveen soils are on fan terraces, stream terraces, and relict basin floors. Slopes are 0% to 3%.	-

Table 3-3. Soil Associations within the Study Area (continued)

Soil Series	Description	Notes
Maripo	Very deep, somewhat excessively drained soils that formed in recent stratified stream alluvium. Maripo soils are on flood plains and alluvial fans and have slopes of 0% to 3%.	Maripo Sandy Loam is unique to Alternative H
Mohall	Very deep, well-drained soils formed in fan and stream alluvium from mixed sources. Mohall soils are on fan terraces, stream terraces, and relict basin floors and have slopes of 0% to 8%.	-
Perryville	Very deep, well-drained soils that formed in mixed alluvium. Perryville soils are on alluvial fans and terraces and have slopes of 0% to 3%.	-
Rillito	Very deep, somewhat excessively drained soils that formed in mixed alluvium. Rillito soils are on fan terraces or stream terraces. Slopes are predominantly 0% to 5% but range to 40%.	-
Torripsamments and Torrifluvents	Frequently flooded.	-
Tremant	Very deep, well-drained soils formed in fan alluvium, stream alluvium, and eolian deposits. Tremant soils are on fan terraces, stream terraces, or relict basin floors. Slopes are 0% to 5%.	-
Valencia	Very deep, well-drained soils formed in recent alluvium. Valencia soils are on floodplains and alluvial fans and have slopes of 0% to 2%.	-
Vecont	Very deep, well-drained soils that formed in alluvium from mixed sources. Vecont soils are on basin floors and have slopes of 0% to 1%.	Vecont Loam is unique to Alternative H
Why	Very deep, somewhat excessively drained soils formed in stratified fan alluvium. Why soils are on alluvial fans and floodplains and have slopes of about 1%.	-

Source: NRCS 1974.

All soils in the project area exhibit slow or slow to medium runoff, and the hazard of erosion from water or wind is slight or slight to moderate. All soil reclamation efforts on the project will be limited by the region's dry climate. All soils in the project area are low in organic matter content and generally have poor suitability for planting or growing crops.

The capability classes and capability subclasses of soils in the project area were reviewed to identify potential limitations to reclamation efforts and sensitivity to erosion. All soils in the project area fall under capability Class VII, described as having "very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife" (NRCS 1977). Capability subclasses indicate the main limitation of that soil, such as erosion or shallowness.

The primary limitations on project area soils are being too shallow, droughty, or stony (capability subclass *s*); erosion (*e*); and being too dry (*c*). Although not listed as specific limitations, soils in the project area have limited depth of topsoil, low organic content, and a droughty nature. The effects of these limitations on soil resources would be increased potential for erosion and a much longer time required for revegetation to occur.

Some surface areas within the project area may be covered with biological soil crusts, an intimate association between soil particles and cyanobacteria, algae, microfungi, lichens, and bryophytes that live within or on top of the uppermost millimeters of soil. Biological soil crusts are also known as cryptobiotic,

cryptogamic, and microbiotic soil crusts (Rosentreter et al. 2007). Biological soil crusts are recognized as important features of desert ecosystems because of their ability to stabilize the soil; capture and retain atmospheric moisture, rainfall, and nitrogen; facilitate seed germination; and increase nutrient availability for plant growth (Belnap et al. 2001). Biological soil crusts in the Sonoran Desert ecosystem occur as a flat layer on the surface of the soil (Belnap et al. 2001). The removal of this type of biological soil crust allows water to flow unimpeded over the soil surface, which reduces moisture infiltration into the soil and increases soil erosion (Belnap et al. 2001).

3.5 VEGETATION Resources

This section describes the dominant vegetation communities and special-status plant species, including Federally and state-protected species, and invasive/noxious weeds.

3.5.1 Study Area

The study area for vegetation communities is defined as Rainbow Valley, including the SDNM to the west, SR 238 to the south, Sierra Estrella Mountains to the east, and Ocotillo Road to the north (Map Volume, Figure 3-5).

3.5.2 Vegetation Communities

Upland vegetation communities for the project area were identified using USGS Gap Analysis Program (GAP), which is represented in acres by a land cover data set of natural assemblages of plant species produced by the USGS and other partners (USGS 2004). Figure 3-5 (Map Volume) depicts the GAP data within the project area and vicinity, of which four main vegetation communities are present: 1) agriculture; 2) North American Warm Desert Riparian Woodland and Shrubland; 3) Sonora-Mojave Creosote Bush-White Bursage; and 4) Sonora-Mojave Mixed Salt Desert Scrub. The xeroriparian vegetation community was identified from linear wash features on 100k topo maps, and is represented in miles. Xeroriparian communities generally consist of dense stands of desert trees and shrubs including desert ironwood (*Olneya tesota*), blue paloverde (*Parkinsonia florida*), velvet mesquite (*Prosopis velutina*), and wolfberry (*Lycium* spp.).

All alternatives contain portions of GAP vegetation communities 1, 3, 4, and xeroriparian. Alternative A also contains a small portion of vegetation community 2, as described above, which occurs along a large wash. Although the GAP vegetation data indicate that the project area is mostly composed of the Creosote Bush-White Bursage vegetation community (which may be the result of GAP's mapping methods), during site visits, white bursage (*Ambrosia dumosa*) was only observed at the far south end of the project area. Saltbush species (*Atriplex* spp.) were not observed in the project area. Site visits indicated that the project area appears to be composed of a fairly uniform, or homogeneous, stand of creosote bush (*Larrea tridentata*). The GAP vegetation data do appear to indicate that the majority of the project area is dominated by creosote bush (USGS 2004:129, 131, 197, 241).

3.5.3 Special-Status Plant Species

This section provides a summary of the special-status plant species known to occur or that have the potential to occur in the project area. A more detailed analysis of these species is included in the Biological Evaluation (BE) (SWCA 2009a). Six plant species were evaluated for this project: Arizona cliffrose (*Purshia subintegra*), Acuña cactus (*Echinomastus erectocentrus* var. *acunensis*), Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*), Arizona-Sonoran rosewood (*Vauquelinia californica* spp. *Sonorensis*), Kofa Mountain barberry (*Berberis harrisoniana*), and Tumamoc globeberry (*Tumamoca*

macdougalii). These species include all plant species for this region that have ESA or BLM special-status designations. None of these species occur in the project area (Appendix H).

3.5.3.1 Arizona Native Plant Law Protected Species

The Arizona Native Plant Law (ANPL) provides protection for native plants classified by the Arizona Department of Agriculture (ADA). This law states that protected plants cannot be removed from any lands, including private lands, without permission and a permit from the ADA (ADA 2005). Six plant species that have protections under the ANPL were identified along the washes and edges of the study area. Table 3-4 lists the ADA-protected plant species in the project area and the type of protection they are afforded under the ANPL.

Table 3-4. Plants Observed within the Project Area that are Protected under the Arizona Native Plant Law

Species	Category of Protection
Saguaro (normal form)	Salvage Restricted
Saguaro (crested/fan-top form)	Highly Safeguarded
Blue paloverde	Salvage Assessed
Velvet mesquite	Salvage Assessed; Harvest Restricted
Barrel cactus	Salvage Restricted
Crucifixion thorn	Salvage Restricted
Desert ironwood	Salvage Assessed; Harvest Restricted

3.5.4 Noxious Weeds and Invasive Species

Federal regulations, including the Executive Order (EO) on Invasive Species and the Plant Protection Act, and state regulations, including the ADA regulations on noxious weeds, require that the BLM address proposed actions on BLM-administered land with respect to noxious weeds and the potential effects (Harper-Lore n.d. [2007]). Even though non-native plants were not observed in the project area, they are known to exist in the region; thus, the Parkway could allow the introduction of these species through soil disturbances. Invasive species that are likely to be present in the Rainbow Valley region include black mustard (*Brassica nigra*), Saharan mustard (*B. tournefortii*), buffelgrass (*Pennisetum ciliare*), Mediterranean grass (*Schismus barbatus*), Arabian grass (*S. arabicus*), red brome (*Bromus rubens*), Russian thistle (*Salsola tragus*), Malta starthistle (*Centaurea melitensis*), puncturevine (*Tribulus terrestris*), and saltcedar (*Tamarix* spp.). Table 3-5 provides information on these non-native species that could potentially be introduced by the proposed project.

Table 3-5. Invasive Non-native Plant Species with the Potential to Occur in the Project Area

Common Name	Scientific Name	Growth Form	ADA-Listed Noxious Weed Category
Black mustard	<i>Brassica nigra</i>	Annual forb	Not listed
Buffelgrass	<i>Pennisetum ciliare</i>	Perennial grass	Prohibited and Regulated
Saharan (Asian) mustard	<i>Brassica tournefortii</i>	Annual forb	Not listed
Mediterranean grass	<i>Schismus barbatus</i>	Annual grass	Not listed
Arabian grass	<i>Schismus arabicus</i>	Annual grass	Not listed
Red brome	<i>Bromus rubens</i>	Annual grass	Not listed
Russian thistle	<i>Salsola tragus</i>	Annual forb	Not listed
Malta starthistle	<i>Centaurea melitensis</i>	Annual/biennial forb	Not listed
Puncturevine	<i>Tribulus terrestris</i>	Annual forb	Prohibited and Regulated
Saltcedar	<i>Tamarix</i> spp.	Perennial shrub/Tree	Not listed

3.6 VISUAL RESOURCES

As identified and reported in the LSFO RMP, the BLM manages the scenic value of public lands through the Visual Resource Management (VRM) program. In a two-step visual resource inventory (VRI) process, objectives are established for four “classes” of visual management. In the first step of the VRI process, the BLM inventories scenic resources through three indicators: scenic quality, viewer sensitivity, and distance zones. Based on the VRI the BLM assigned VRM classes in the RMP to define management objectives as discussed below.

3.6.1 Study Area

The study area for visual resources is defined as the 10-mile radius around all action alternatives (Map Volume, Figure 3-6).

3.6.2 Resource Management Plan – Visual Resource Inventory

The VRM class objectives for the project area were established in the LSFO RMP (BLM 2012a). Lands in the Parkway area have been allocated to VRM Class I, II, III, and IV management objectives.

3.6.3 Visual Resource Management

VRM classes are established through the resource management planning process. All lands are placed into one of four classes that identify the degree of acceptable landscape change or alteration, giving consideration to the scenic value of the landscape and other resource values and uses of the land, as described in Table 3-6. Class I objectives are established in areas where no landscape change is desired. Class IV objectives are set for landscapes where BLM manages for uses that will result in substantial landscape changes (e.g., mining, energy development, wind farms). Classes II and III allow for varying degrees of landscape preservation and change in between Classes I and IV. The VRM objectives can then be used to analyze and determine the visual impacts of proposed activities and to gauge the amount of

disturbance an area can tolerate before it exceeds the visual management objectives of its VRM class (BLM 1992).

Table 3-6. VRM Classes Defined

VRM Class	Definition
Class I Objective	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II Objective	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be very low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III Objective	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV Objective	The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating of the basic elements.

All BLM-administered lands within the action alternatives are identified as VRM Class IV, which provides for management activities that require major modifications to the existing character of the landscape (Map Volume, Figure 3-6). These activities may dominate the view and may be the major focus of viewer attention. The action alternatives are also located upon private and state lands which are not subject to BLM VRM requirements for land modification. Other lands within the action alternatives (ASLD, private) are not subject to BLM VRM classifications.

A project-level analysis, or site analysis was performed and included an inventory of scenery, viewing locations, and associated key observation points (KOPs) or viewpoints within the study area. KOPs were selected to represent critical viewing locations within the viewshed to assess the visual impacts to the viewing public from the construction and operation of the proposed Parkway.

3.6.4 Existing Visual Conditions

3.6.4.1 Scenic Quality and Landscape Character

Rainbow Valley is an intermountain valley, within a Class IV VRM. This area is bordered on the north by agricultural and rural development, on the east by the Tucson Electric Power Line Corridor, on the south by Mobile, and on the west by the Section 368 Multi-Use Corridor.

Immediately adjacent to this development, outside of the proposed alternatives, there are Class I, II, and III in the background.

3.6.4.2 *Viewer Sensitivity and Concern Levels*

Sensitive viewing locations, such as residences, roads, or trails, are examples of critical views that may be affected by visual modifications of the landscape. Sensitive viewpoints of the Rainbow Valley are from SDNM, the Sierra Estrella Mountains, local residences, Mobile, and SR 238. These areas were determined to be areas sensitive to change and would be most likely viewed by local residents and visitors.

Concern levels relate to the importance of maintaining existing scenic quality and viewsheds associated with a specific viewing location, and are considered when assessing viewer impacts. The SDNM provides for views and viewing locations often associated with a high degree of viewer concern for maintaining scenic quality. However, a viewing location associated with SR 238, would have a moderate concern level because viewers are traveling at a high rate of speed and are not seeking a recreational experience. Concern levels for each identified KOP were assessed based on the following five criteria: volume of use, viewing duration, concern for visual quality, scenic or historic status, and special status of designations.

3.6.4.3 *Distance Zones*

The assessment was determined through the use of BLM VRM guidance for visual analyses as well as a project-level geographic information system (GIS) delineation of the geographic area visible from the proposed alternatives, referred to as a viewshed delineation. For this evaluation, a viewshed analysis, selection of KOPs, and subsequent visual contrast assessment from each KOP was conducted (Map Volume, Figure 3-7). An inventory and characterization of the affected environment for all alternatives was completed through the documentation of landform, vegetation, and water features (scenery), identification of KOPs and critical viewing locations, and identification of BLM VRI and VRM classifications.

Distance zones are defined as foreground/middle ground (0–5 miles), background (5–15 miles), and seldom seen (7–15 miles or screened). Five KOPs (Map Volume, Figure 3-7) were selected to represent “typical” viewing conditions for each of the three sensitive viewing locations—travel routes (two KOPs), recreation areas (two KOPs), and residences (one KOP)—and are described as follows:

- **Travel Routes:** highways and roads used by origin/destination travelers and designated scenic or historic byways and recreation destination roads (i.e., roads that provide access to designated recreation areas). Travel routes in the study area include the (EPNG) Pipeline Road, Riggs Road, Rainbow Valley Road, and SR 238.
- **Recreation Areas:** existing recreation sites used for picnicking, camping, hiking, scenic overlooks, rest areas, or other recreational activities. Viewpoints are in the SDNM, North Maricopa Wilderness, Anza NHT, and Sierra Estrella Wilderness.
- **Residences:** single-family structures and permanent mobile homes or mobile home parks. One residence in Rainbow Valley was selected to represent typical residential views of the project area. Residences in the background distance zone that would be screened by topography occur in Mobile. Buckeye, Estrella Mountain Ranch, Palo Verde, and Laveen.

These KOPs and associated visual contrast rating sheets are further analyzed in Section 4.6.

3.7 **WATER RESOURCES**

The following section describes the conditions of water resources in the study area surrounding the Parkway, including descriptions of surface water and groundwater resources, and also discusses water supply and demand in this region.

3.7.1 Study Area

The study area for surface waters is defined as the Waterman Wash Sub-Watershed, which includes Waterman Wash, the West Prong, and the Gila River downstream of its confluence with Waterman Wash. The study area for groundwater resources is the Rainbow Valley Groundwater Sub-Basin (Map Volume, Figure 3-8).

3.7.2 Surface Water

The project area is in the southern part of the Phoenix Active Management Area in the Rainbow Valley basin (Map Volume, Figure 3-8). The valley is bounded on the west by the Maricopa Mountains and on the east by the Sierra Estrella Mountains, and it is characterized by flat terrain that slopes gently to the northeast. The area consists primarily of undeveloped, creosote-dominated alluvial plains with unpaved roads near and intersecting the project area. Waterman Wash, an ephemeral wash that joins the Gila River near Buckeye, is in the northeast portion of the project area and is the primary drainage for Rainbow Valley. Agricultural fields are located within this area, mainly adjacent to Waterman Wash. There are no seeps, springs, riparian zones, or wetlands within the study area.

3.7.2.1 Surface Water Quantity Washes

No perennial surface water is present within the project area; however, numerous unnamed ephemeral washes that flow in response to rainfall form the Waterman Wash drainage basin. Two named washes fall within the project area: Waterman Wash and the West Prong, the confluence of which intersects the project area at approximately the midpoint. Waterman Wash is a relatively straight channel that becomes incised along its upper reaches (URS Corporation 2011a) in the vicinity of the project area. Some preliminary field survey has been conducted for portions of the project area (SWCA 2009e, 2009f, 2009g). More exact estimates of the area of impact to jurisdictional waters of the U.S. (WUS) would be made as part of final design and Clean Water Act (CWA) Section 404 permitting for each phase.

A complete jurisdictional delineation will need to be conducted prior to construction to support Clean Water Act Section 404 permitting, to minimize surface water impacts and to evaluate the extent to which washes within the project area exhibit characteristics the U.S. Army Corps of Engineers (USACE) may consider indicators of potentially jurisdictional WUS, thus requiring a permit under Section 404 of the CWA. The delineation would identify WUS that would be affected by the Parkway. Section 404 permitting would be conducted by the City prior to construction.

3.7.2.2 Sheet Flow

Sheet flow is overland flow of water that is not concentrated into channels. Rain that is not absorbed in the soil will remain on the ground surface and can quickly run downstream as sheet flow with the potential to generate flooding. This flow process occurs in the Rainbow Valley, as wide shallow flow (URS Corporation 2011b) and large sheet flow areas were identified in the vicinity and within the project area (Kellogg 2011). It can be a challenge to collect sheet flow as a concentrated flow to convey around or through planned development, as well as recreate shallow sheet flow conditions downstream because the drainage pattern of sheet flow is wide and shallow.

3.7.2.3 Floodplains

The action alternatives are in an area that receives both shallow sheet flow and channelized flow during large storm events (V3 2007). The Federal Emergency Management Agency (FEMA) Flood Insurance Rate

Maps (FIRMs) for Maricopa County (panels 04013C3400M, 04013C3025M, and 04013C3000M in Appendix G, FEMA Maps) show that portions of the project area are located in 100-year and 500-year floodplains as designated by FEMA (2018) (Map Volume, Figure 3-9). These floodplain areas occur where the project alternatives cross larger washes. Development within FEMA-designated and pending floodplains is strictly regulated by both the City and Maricopa County.

3.7.3 Groundwater

Groundwater would be required during the construction phase only. The water source has yet to be identified, but will be purchased from an existing local source such as the City or private individual. The study area for groundwater resource evaluation focused on the West Salt River Valley and Rainbow Valley Sub-Basin because the water source will be local (Map Volume, Figure 3-10).

3.7.3.1 Existing Conditions

The City is located in the western portion of the Salt River Valley Sub-Basin, which is a broad, northeast-southwest-trending alluvial basin characterized by varying degrees of subsurface consolidation (Hammett and Herther 1995). Depth to bedrock in the West Salt River Valley ranges from less than 10 feet near the margins to more than 10,000 feet southeast of Gilbert (ADWR 1994). Regional data indicate that the deepest section is located in the central part of the basin and may exceed 9,600 feet (ADWR 1994).

The main aquifer system is composed of basin-fill deposits that are divided into three distinct hydrogeologic units—the upper, middle, and lower alluvial units (Rascona 2003). Groundwater withdrawal in the West Salt River Valley generally has exceeded recharge, creating localized areas of groundwater-level depression.

The Parkway would be located in the Rainbow Valley Sub-Basin. Withdrawal has been on the decline since 1972; however, a groundwater depression is still evident in the northwestern portion of the basin (Rascona 2003). This cone of depression is close to the Buckeye Hills, approximately 6 miles northwest of the northernmost section of the project. Although several wells in the vicinity of the project indicate that a rise in groundwater level has occurred between 1991 and 2003, most have seen a drop-in groundwater levels (1- to 15-foot decline) for the same period (ADWR 2009). Depth to groundwater in Rainbow Valley ranges from 67 feet below ground surface (bgs) in the northwest to more than 400 feet bgs in the southeast (Rascona 2003).

There are 124 wells registered with ADWR within 1 mile of the project area (Map Volume, Figure 3-10). These wells are used mostly for environmental monitoring of irrigation and/or water production for domestic use (ADWR 2018b). The average depth of these wells is more than 483 feet bgs, with the deepest well being 1,504 feet bgs.

ADWR maintains a repository for statewide groundwater data known as the Groundwater Site Inventory (GWSI) database. The GWSI contains field-verified well and spring data collected by ADWR or USGS that are continually being updated. A review of GWSI data indicates that the average depth to water in the vicinity of the project is 385 feet bgs (ADWR 2018b).

3.7.3.2 Groundwater Recharge

Recharge to the regional aquifer occurs through both natural and artificial processes. Natural recharge occurs in ephemeral streams and along mountain fronts, whereas artificial recharge occurs from effluent discharge and managed underground storage facilities. No managed underground storage facilities are

located within the Rainbow Valley; however, other sources of recharge in the basin include incidental recharge from agricultural irrigation.

3.7.3.3 Groundwater Flow

In the Rainbow Valley basin, groundwater generally flows northwest toward the Gila River (Map Volume, Figure 3-10). However, an area in the northwestern portion of the basin where groundwater flows southeast toward a cone of depression located near the Buckeye Hills (ADWR 2009; Rascona 2003).

3.7.3.4 Groundwater Quality

Water quality data for wells in the vicinity of the project were reviewed. Samples collected from wells near the project between 1975 and 2004 indicate the general water quality is good, but there have been instances in which concentrations have equaled or exceeded drinking water standards for certain water quality parameters. In the majority of the wells, the parameter of concern was fluoride with an occurrence of nitrate/nitrite. In one well near the south end of the project area, the parameter exceedance was manganese and lead (ADWR 2009).

3.7.4 Water Supply and Demand

An important facet of the Parkway construction would be the use of water for both compaction and dust control in the roadway; along haul roads; and in construction staging areas. Construction water is mixed with soil to increase its strength and is also used as a palliative in dust control. Water would also be used during site reclamation. Water would be purchased from either the City or private individuals; these sources would be determined closer to the start of construction. Construction water would be delivered to the site by pumps through a plastic pipe and stored in a lined pond. The pond would be located within the ROW or on private land and moved as needed to keep pace with construction.

3.8 WILDLIFE AND SPECIAL-STATUS SPECIES

This section describes the occurrence and distribution of wildlife species within the study area, including endangered, threatened, special-status, and other sensitive terrestrial species. Threatened and endangered species are those species that are protected under the ESA and include proposed and candidate species. Sensitive species include the BLM LSFO priority animal species list, which encompasses BLM Sensitive Species, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC)/USFWS Migratory Bird Treaty Act (MBTA) Focal Species, Game Species, and Raptor Species, and Arizona Game and Fish Department (AGFD) Species of Greatest Conservation Need (SGCN). Wildlife habitat and distribution data were obtained from existing resource data for the BLM LSFO, state resource agencies, and other studies. Relevant scientific literature and wildlife management reports were used as the sources for describing species ecology, habitat needs, distribution, and management guidelines.

3.8.1 Study Area

The study area for wildlife is defined as Rainbow Valley, with the boundary of the SDNM to the west, SR 238 to the south, Sierra Estrella Mountains to the east, and northern limit of Goodyear (Map Volume, Figure 3-11).

3.8.2 General Wildlife

3.8.2.1 Reptiles and Amphibians

Snakes that are known to occur or may occur in the Rainbow Valley region, in and adjacent to the study area, include the Arizona glossy snake (*Arizona elegans noctivaga*), variable sandsnake (*Chilomeniscus stramineus*), western shovel-nosed snake (*Chionactis occipitalis*), Sonoran whipsnake (*Coluber bilineatus*), red racer coachwhip (*Coluber flagellum piceus*), desert nightsnake (*Hypsiglena chlorophaea*), California kingsnake (*Lampropeltis getula californiae*), spotted leaf-nosed snake (*Phyllorhynchus decurtatus*), saddled leaf-nosed snake (*P. browni*), Sonoran gophersnake (*Pituophis catenifer affinis*), long-nosed snake (*Rhinocheilus lecontei*), desert patch-nosed snake (*Salvadora hexalepis hexalepis*), Smith's black-headed snake (*Tantilla hobartsmithi*), checkered gartersnake (*Thamnophis marcianus*), Sonoran lyresnake (*Trimorphodon lambda*), Sonoran coralsnake (*Micruroides euryxanthus*), western threadsnake (*Leptotyphlops humilis*), western diamond-backed rattlesnake (*Crotalus atrox*), Sonoran sidewinder (*C. cerastes cercobombus*), speckled rattlesnake (*C. mitchellii*), black-tailed rattlesnake (*C. molossus*), Mohave rattlesnake (*C. scutulatus*), and tiger rattlesnake (*C. tigris*) (Arizona Partners in Amphibian and Reptile Conservation [AZPARC] 2008; HabiMap Arizona [HabiMap] 2013). It should be noted that the majority of these species are not likely to occur within the project area, but are more likely to occur in the larger study area.

Lizards that are known to occur or may occur in the Rainbow Valley region, in and adjacent to the study area, include Gila monster (*Heloderma suspectum*), western banded gecko (*Coleonyx variegatus*), Sonoran collared lizard (*Crotaphytus nebrius*), long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), Goode's horned lizard (*Phrynosoma goodei*), desert horned lizard (*P. platyrhinos*), regal horned lizard (*P. solare*), desert spiny lizard (*Sceloporus magister*), long-tailed brush lizard (*Urosaurus graciosus*), ornate tree lizard (*U. ornatus*), common side-blotched lizard (*Uta stansburiana*), tiger whiptail (*Aspidoscelis tigris*), red-backed whiptail (*A. xanthonota*), and desert night lizard (*Xantusia vigilis*) (AZPARC 2008; HabiMap 2013). As noted for the snake species listed above, some of these species are not likely to occur within the study area, but are more likely to occur in the larger study area.

Other reptiles that are known to occur or may occur in the Rainbow Valley region, in and adjacent to the study area, include the non-native pond slider (*Trachemys scripta*), Sonora mud turtle (*Kinosternon sonoriense*), and the introduced spiny softshell (*Apalone spinifera*) (AZPARC 2008). As noted for the other reptiles listed above, the majority of these species are not expected to occur within the project area or study area, only in surrounding areas that contain permanent water.

Amphibians that are known to occur or may occur in the Rainbow Valley region, in and adjacent to the study area, include the non-native Rio Grande leopard frog (*Rana berlandieri*), the introduced American bullfrog (*R. catesbeiana*), Sonoran Desert toad (*Bufo alvarius*), red-spotted toad (*B. punctatus*), Woodhouse's toad (*B. woodhousii*), and Couch's spadefoot (*Scaphiopus couchii*) (AZPARC 2008; HabiMap 2013). These species would most likely be present in areas with water present during the rainy monsoon season, such as drainages, stock tanks, and low-lying areas where water can pool. Some amphibian species could be present within the ROW area but are more likely to be present within the study area.

3.8.2.2 Birds

Common bird species that are associated with desert scrub habitat include greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), common raven (*Corvus corax*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), black-throated sparrow (*Amphispiza bilineata*), and

sage sparrow (*Amphispiza belli*). Game birds that use desert habitats include mourning dove (*Zenaida macroura*), white-winged dove (*Z. asiatica*), and Gambel's quail (*Callipepla gambelii*) (BLM 1988). Common bird species typically found in desert riparian habitat include yellow-rumped warbler (*Dendroica coronata*), verdin (*Auriparus flaviceps*), black-tailed gnatcatcher (*Poliophtila melanura*), red-winged blackbird (*Agelaius phoeniceus*), mourning dove, and common yellowthroat (*Geothlypis trichas*). Numerous other species are thought to occur in the area, including house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), cactus wren (*Campylorhynchus brunneicapillus*), and various flycatchers, kingbirds, thrashers, and sparrows.

Additional information on birds that may be present within the study area is provided in Section 3.8.4.

3.8.2.3 Mammals

The study area supports habitat for a variety of mammal species, including small and medium-sized mammals, carnivores, bats, and big-game species. Small and medium-sized mammals that are likely present in the region include black-tailed jackrabbit (*Lepus californicus*), antelope jackrabbit (*L. alleni*), desert cottontail (*Sylvilagus audubonii*), desert pocket mouse (*Chaetodipus penicillatus*), Arizona pocket mouse (*Perognathus amplus*), little pocket mouse (*P. longimembris*), cactus mouse (*Peromyscus eremicus*), house mouse (*Mus musculus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), Harris' antelope squirrel (*Ammospermophilus harrisi*), badger (*Taxidea taxus*), raccoon (*Procyon lotor*), and various species of skunk. Carnivore species include mountain lion (*Puma concolor*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), and kit fox (*Vulpes macrotis*) (HabiMap 2013).

Several bat species occur within the study area and include both common and sensitive species; additional information on endangered, threatened, and other sensitive bat species is presented in Section 3.9.3. Common bat species are likely to occur along drainages that contain standing bodies of water and adequate vegetative cover. Trees along these drainages may also provide roosting habitat for bats, as well as mines, caves, and other crevices that are present within the Maricopa Mountains along the western boundary of the study area. Common bat species that may be found in the desert scrub and wash habitats throughout the study area include the pallid bat (*Antrozous pallidus*), western yellow bat (*Lasiurus xanthinus*), Yuma myotis (*Myotis yumanensis*), Mexican free-tailed bat (*Tadarida brasiliensis*), and western small-footed myotis (*Myotis ciliolabrum*) (HabiMap 2013).

Big-game species within the study area include desert bighorn sheep (*Ovis canadensis nelsoni*), mule deer (*Odocoileus hemionus*), and collared peccary, or javelina (*Pecari tajacu*).

3.8.3 Endangered, Threatened, and Other Special-Status Wildlife Species

3.8.3.1 Federally Listed Wildlife Species

Under the ESA, the USFWS lists include 17 threatened, endangered, or endangered/experimental, non-essential wildlife species that are known or suspected to occur or that have habitat in Maricopa County and are protected under the authority of the ESA (USFWS 2012). Habitat requirements and the potential for occurrence for these 17 species are summarized in Table H-1 in Appendix H.

Four species, the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*), Sonoran desert tortoise (*Gopherus morafkai*), roundtail chub (*Gila robusta*), and Sprague's pipit (*Anthus spragueii*), were all previously candidate species that were considered during consultation with the USFWS for this project. The USFWS determined that these species did not warrant listing under the ESA, and they were removed from the list of candidate species since initial consultation (USFWS 2014, 2015, 2016, 2017). The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) was previously an endangered species that the

USFWS determined has recovered and no longer warrants protection under the ESA (USFWS 2018). Four additional species, the ocelot (*Leopardus pardalis*), Colorado pikeminnow (*Ptychocheilus lucius*), spikedace (*Meda fulgida*), and Nichol's Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*), have all been recently known or suspected to occur or have habitat in Maricopa County and were not considered during initial consultation with the USFWS. However, no effects to these species would occur as a result of the project, therefore, no additional consultation with the USFWS was determined to be necessary.

For the 17 listed species, the study area is either clearly beyond the known geographic or elevational range of these species, or it does not contain vegetation or landscape features known to support these species, or both. Furthermore, the study area does not occur in or near any Federally proposed or designated critical habitat; however, it does occur within the Sonoran pronghorn (*Antilocapra americana sonoriensis*) Nonessential Population 10(j) area, which is discussed in Table H-1 of Appendix H, Species Tables. The American peregrine falcon (*Falco peregrinus anatum*) and the bald eagle (*Haliaeetus leucocephalus* [desert population]) are delisted species under the ESA; thus, they are not currently afforded protection under the ESA. The results of the BE (SWCA 2009a) and presented in Table H-2 (Appendix H) is that listed species are not likely to occur in the study area due to the lack of suitable habitat.

3.8.3.2 BLM Special-Status Species

The LSFO RMP identifies 71 priority animal species that have the potential to occur within LSFO and SDNM region. The list of priority species includes the following:

- Selected endangered or candidate species as listed under the ESA;
- BLM Sensitive Species: a species proven to be imperiled in at least part of its range and documented or considered likely to occur on BLM-administered lands;
- BCC: species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2008);
- Game Species: species managed by AGFD and BLM; and
- Raptor Species: bird species protected under the MBTA and Bald and Golden Eagle Protection Act (BGEPA).

Six of these species (Sonoran pronghorn, southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), Yuma clapper rail (*Rallus obsoletus yumanensis*), acuña cactus (*Echinomastus erectocentrus* var. *acunensis*), and Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) are all listed under the ESA, therefore, they are not addressed in this section (see section above for effects to these species). The Tucson-shovel nosed snake has been removed as a BLM Sensitive Species (BLM 2017b) and is not addressed further. Habitat requirements and the potential for occurrence for the remaining 63 species are summarized in Table H-2 in Appendix H. Twenty-seven of the 67 priority wildlife species listed for Lower Sonoran Field Office and SDNM by the BLM have the potential to occur or are known to occur within the study area. For the remaining species, the study area is either clearly beyond the known geographic or elevational range of that species, or it does not contain vegetation or landscape features known to support that species, or both.

Of the 27 priority wildlife species, 13 are listed as BLM Sensitive species and have the potential to occur within the study area: Sonoran desert tortoise, California leaf-nosed bat (*Macrotus californicus*), cave myotis (*Myotis velifer*), golden eagle (*Aquila chrysaetos*), gilded flicker (*Colaptes chrysoides*), Great Plains narrow-mouthed toad (*Gastrophryne olivacea*), ferruginous hawk (*Buteo regalis*), LeConte's thrasher (*Toxostoma lecontei*), lowland burrowing treefrog (*Smilisca fodiens*), Sonoran green toad (*Bufo retiformis*), Townsend's big-eared bat (*Corynorhinus* [=Plecotus] *townsendii*), Desert purple martin (*Progne subis*

hesperia), and western burrowing owl (*Athene cunicularia hypugaea*). These species are addressed in Table H-2 in Appendix H, Species Tables.

Seven game species, which are also listed as BLM priority species, have the potential to occur within the study area: mountain lion, desert bighorn sheep, mule deer, javelina, Gambel's quail, mourning dove, and white-winged dove. The study area occurs within Game Management Unit (GMU) 39, which is divided roughly in half; the study area is within the east half of GMU 39. AGFD manages for stable to increasing game populations in GMU 39. Hunts for deer (mule deer or white-tailed), javelina; small game, predators, fur-bearers and migratory birds are within the study area (east half of GMU 39). These species are in Table H-2 in Appendix H.

Nine BLM priority species that have the potential to occur in the study area are also listed by the AGFD as SGCN. These include: Sonoran desert tortoise, California leaf-nosed bat, crested caracara (*Caracara cheriway*), Great Plains narrow-mouthed toad, LeConte's thrasher, lowland burrowing treefrog, and western burrowing owl. However, SGCN are also categorized by vegetation type and for the Creosote Bush-White Bursage vegetation classification, which the majority of the study area occurs within, there are 32 SGCN species listed for this portion of the Sonoran Desert Ecoregion. Fifteen of these species are addressed under other status listings. Of the 17 remaining, the study area is not within their geographic range; thus, they would not be expected to occur in the study area. The remaining two species, sage thrasher (*Oreoscoptes montanus*) and big free-tailed bat (*Nyctinomops macrotis*), could occur within the study area.

3.8.4 Migratory Birds

In order to promote the conservation of migratory birds, several additional species have been given specific consideration when analyzing the effects of proposed management actions. These species have been identified as priority species for conservation because of their declining abundance or distribution or because of their vulnerability to local and/or rangewide risk factors. Table H-2 in Appendix H, identifies BCC, game, and raptor species and species protected under the MBTA and BGEPA that are also listed by the BLM LSFO as priority species that have the potential to occur within the LSFO region and SDNM planning region. The species that have the potential to occur within the study area include Bell's vireo (*Vireo bellii*), Costa's hummingbird (*Calypte costae*), Crissal thrasher (*Toxostoma crissale*), crested caracara, Gambel's quail, golden eagle, great-horned owl (*Bubo virginianus*), LeConte's thrasher, long-eared owl (*Asio otis*), Lucy's warbler (*Vermivora luciae*), mourning dove, white-winged dove, western burrowing owl, and yellow warbler (*Dendroica petechia*). Arizona Partners in Flight also identifies Costa's hummingbird and LeConte's thrasher as indicators of desert scrub health and Lucy's warbler as an indicator of riparian health (Latta et al. 1999). Through an Arizona Breeding Bird Atlas query in AGFD's HabiMap (2013) of the three USGS 7.5-minute topographic maps that cover the region, 47 bird species are noted as having confirmed, probable, or possible presence within the area. Many of these species are discussed above or in subsequent sections.

3.8.5 Wildlife Connectivity

Two wildlife linkages have been identified within the study area: the Sierra Estrella-SDNM linkage zone (Arizona Wildlife Linkages Assessment Workgroup 2006) and a wildlife corridor identified by BLM, as adopted from the *Bighorn Sheep Management Plan* (AGFD 2007a), which incorporates a swath of BLM-administered lands between the Sierra Estrella Mountains and Maricopa Mountains and is identified by AGFD as a possible bighorn sheep dispersal corridor, as well as a multi-species biologically best movement corridor. The Sierra Estrella-SDNM linkage (and subsequent alternative revisions) was further modeled through GIS analysis to create a Linkage Design based on habitat suitability and optimal travel routes for a group of focal species representative of that linkage area (Beier et al. 2008). Focal species used to identify the linkage between the Sierra Estrella and Maricopa Mountains include: mountain lion, bobcat, bighorn

sheep, mule deer, javelina, desert tortoise, and Gila monster. For each species a biologically best corridor was identified that represented the best route for a species to use as it traveled between large habitat areas (i.e., Sierra Estrella and Maricopa Mountains). Additional focal species for this linkage include: desert iguana, giant spotted whiptail lizard (*Cnemidophorus burti stictogrammus*), leopard chuckwalla (*Sauromalus obesus*), long-tailed lizard, red-backed whiptail, regal ringneck snake (*Diadophis punctatus regalis*), desert rosy boa (*Lichamira trivirgata*), side-blotched lizard, tiger whiptail, tree lizard, zebra-tailed lizard, Sonoran Desert toad, Gambel's quail, roadrunner, burrowing owl, and night-blooming cereus (*Cereus sp.*) (Beier et al. 2008).

The results of the Linkage Design show four linkages between the Sierra Estrella and SDNM: three are linear linkages across Rainbow Valley, and a fourth heads south from the Sierra Estrella, and heads southwest to the SDNM (Map Volume, Figure 3-11) (Beier et al. 2008). Of the three linkages that cross Rainbow Valley, the northernmost linkage is entirely contained within the BLM-identified linkage. The central of the three linkages that cross Rainbow Valley overlaps the eastern and western portions of the BLM linkage. The southern Rainbow Valley linkage overlaps the eastern portion of the BLM linkage at the southern tip of the Sierra Estrella. The central Rainbow Valley linkage is identified as the biologically best corridor for the bobcat, desert tortoise, Gila monster, javelina, and mule deer. The northern Rainbow Valley linkage is identified as the biologically best corridor for bobcat. The southern Rainbow Valley linkage is identified as the biologically best corridor for Gila monster and, to a limited extent, javelina. The biologically best corridor for bighorn sheep and mountain lion between the Sierra Estrella–SDNM linkage does not cross Rainbow Valley.

The overall connectivity goals for this region are to maintain wildlife movement corridors between the Gila Bend Mountains, Gila River Wildlife Area Complex, Buckeye Hills, Sierra Estrella Mountains, and the SDNM. The Rainbow Valley and Vekol Valley, to the south, have been identified as important core desert valley habitat for many reptile, amphibian, and mammal species, as well as a major landscape link between southern and northern Arizona. Waterman Wash and several of its east/west tributaries, which originate from the Sierra Estrella and Maricopa Mountains and flow to the Gila River, support xeroriparian habitat and ephemeral sources of water and are likely critical habitat and corridors for wildlife.

AGFD studies have identified several species crossing (EPNG) Pipeline Road, which parallels the eastern border of the SDNM and is located just west of the action alternatives. Track surveys have detected mule deer, kit fox, and javelina crossing the (EPNG) Pipeline Road (AGFD 2008).

3.9 LANDS AND REALTY

The following section discusses current conditions in terms of land ownership, land use planning, and current land uses, including existing ROWs.

3.9.1 Study Area

The study area for lands and realty is defined as the 250-foot ROW for all action alternatives (Map Volume, Figure 3-12).

3.9.2 Land Use Planning

The project area and vicinity include several county and municipal land use planning areas that have set goals and policies to guide future land use and development. Chief among planning efforts is the *Goodyear 2025: City of Goodyear General Plan* (City General Plan), as amended (City 2014a). Land use categories (or classifications) are determined by the local governments that have jurisdiction over the land. These categories are tools that provide standard language in the community planning process with which to derive

a land use plan. The City has 17 land use categories, including residential, agricultural, and commercial classifications (Diagram 4) (City 2014a).

The BLM-administered lands are within the Southern Goodyear Study Area, as determined by the City General Plan (City 2014a). In the Land Use and Transportation Plan Chapter, the City has identified the project area as being a proposed freeway/parkway-proposed and parkway-proposed (Diagram 5). The Proposed Action and all action alternatives would conform to the City General Plan.

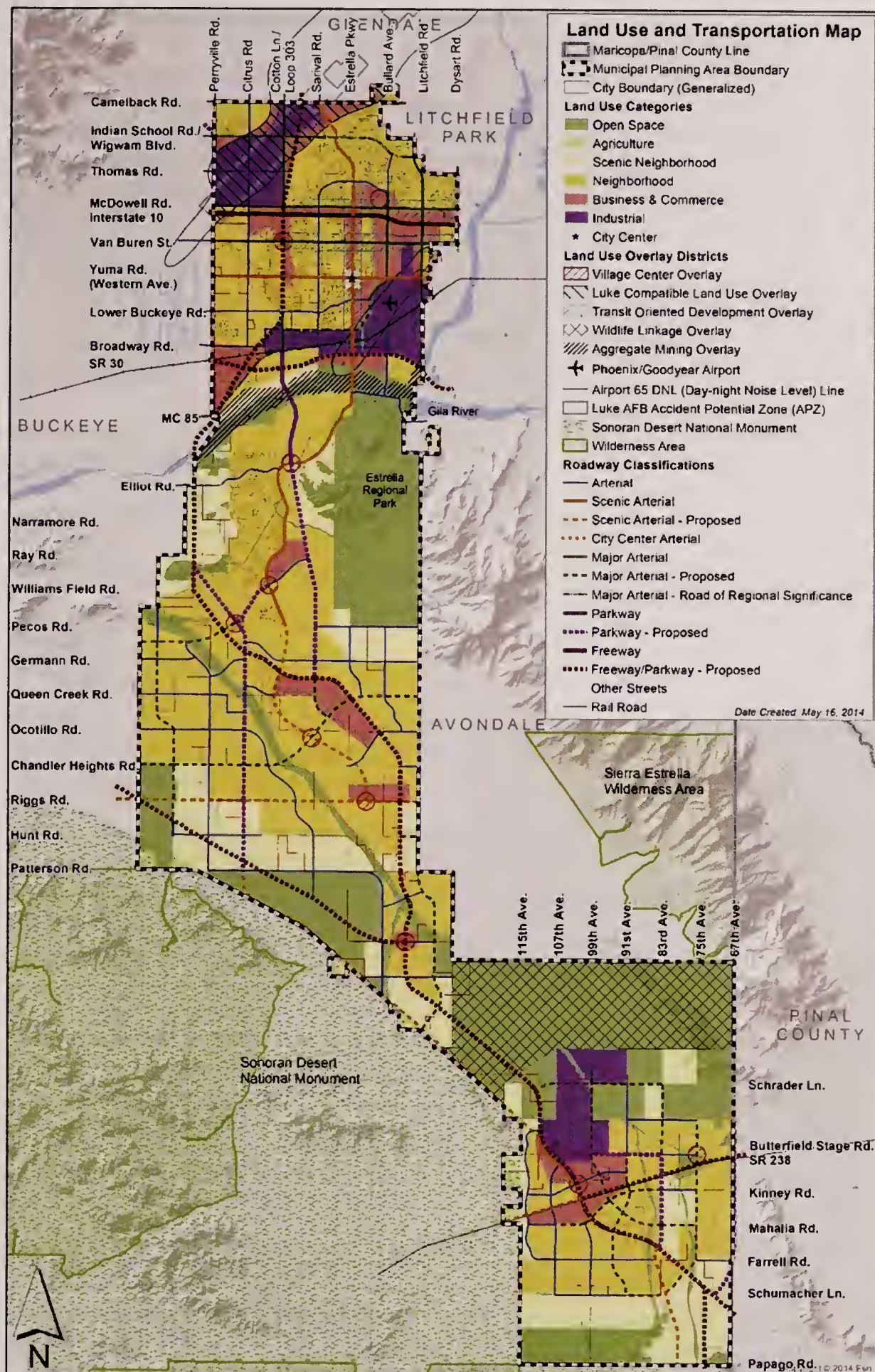


Diagram 4. City of Goodyear Land Use and Transportation Map



Diagram 5. Goodyear Transportation Master Plan.

3.9.3 Current Land Uses

Figure 3-13 (Map Volume) illustrates the existing uses of the EPNG multi-use utility corridor and their relationship to the alternative alignments. The 1-mile-wide EPNG multi-use utility corridor runs roughly parallel to the northern boundary of the SDNM. Allowable uses within this EPNG multi-use utility corridor generally include roadways, transmission lines, gas lines, and pipelines. This EPNG multi-use utility corridor has been identified by Section 368 of the Energy Policy Act of 2005 as a designated energy corridor, and the LSFO RMP acknowledges this designation.

Most of the BLM-administered lands in the study area are undeveloped. Some of these lands are encumbered by ROWs, leases, or permits for structures, pipelines, and facilities to store and transport water, sewer, electrical, and communications systems; for flood control facilities; and for highways, roads, railroads, and other means of transportation. There are 26 acres are identified for land disposal within the study area.

3.10 LIVESTOCK GRAZING

3.10.1 Study Area

The study area for livestock grazing is defined as the Beloat and Conley grazing allotments (Map Volume, Figure 3-14).

3.10.2 Grazing Allotments

A large portion of the study area is classified by BLM as being available for livestock grazing, and the majority of the land is currently under permit for livestock grazing. Livestock grazing on the study area is located within the Beloat and Conley allotments

The Beloat Allotment contains a combination of BLM, state, and private lands over approximately 176,763 acres, 101,111 acres of which is administered by the BLM. The allotment is designated as perennial/ephemeral, where approximately 300 cattle are authorized to graze the allotment year round, but when forage conditions warrant, livestock grazing may be authorized to utilize and ephemeral forage crop. The Beloat Allotment is permitted for livestock grazing on both the SDNM and the LSFO portions of the allotment.

The Conley Allotment contains a combination of BLM, state, and private lands over approximately 118,422 acres, 91,018 acres of which is administered by the BLM. The Conley Allotment is also designated as a perennial/ephemeral allotment. The portion of the Conley Allotment within the SDNM, consisting of 77,485 acres, was closed to livestock grazing in the SDNM RMP (BLM 2012b).

The actual year-long use on these two allotments varies from year to year, based on forage and livestock market conditions.

3.10.3 Livestock Movement

Livestock movement within the Beloat and Conley allotments is currently controlled by pasture fencing and livestock waters. The pasture fencing is constructed of multiple strands of barbed wire and is intended to allow specific areas of pasture to be grazed while ensuring that other pasture areas rest and re-grow. To facilitate livestock movement, livestock waters can be turned on and off to draw the livestock to different areas within the pasture. Except for boundary fences, there is currently little pasture fencing within the

project area on either the Belloat or the Conley allotments. Figure 3-14 (Map Volume) shows the current range improvements, including fences and water sources.

3.11 RECREATION MANAGEMENT

The recreation opportunity and settings are managed by local, state, and Federal agencies on lands within and adjacent to all action alternatives and sub-alternatives for the Parkway. These recreation activities cover a broad spectrum of recreational pursuits, from dispersed and casual recreation to organized, and BLM-permitted uses. Recreation in the area of analysis include off-highway vehicle (OHV) use, hunting, hiking, wildlife viewing, horseback riding, target shooting, camping, mountain biking, geocaching, picnicking, night-sky viewing, sightseeing, and photography.

3.11.1 Study Area

The study area for recreational opportunities includes the SDNM to the west, Sierra Estrella Mountains to the east, and Rainbow Valley shown in Figure 3-15 (Map Volume).

3.11.2 Recreation Management—Settings and Opportunities

There are a number of local recreation opportunities under Federal, state, tribal, and local management in the vicinity of the proposed Parkway. However, only BLM, AGFD, and ASLD manage for recreation within the study area.

3.11.2.1 BLM Recreation Areas

Established in 2001, the SDNM provides users opportunities for dispersed recreation in relatively undisturbed settings. OHV use, hiking, biking, horseback riding, camping, wildlife viewing, hunting, picnicking, cultural and historical viewing and night sky viewing are all popular recreational pursuits in SDNM. The SDNM contains at least two historically significant national trails: the Anza NHT and Butterfield Overland Stage Route.

BLM-administered land within the study area outside the SDNM is also widely used for recreational pursuits. Common activities include hunting, target shooting, OHV use, and camping. Hunting is common in the agriculture fields, along canals, and near desert washes. Dove and quail hunting is most common; varmint and small-game hunting also occurs. Big-game hunting for mule deer, white-tailed deer, javelina, and desert bighorn sheep is limited in the study area.

Current recreational settings are back country in the North Maricopa Mountains Wilderness and the Sierra Estrella Wilderness, with a mix of front country and back country between the two Wilderness areas. A back country area provide for dispersed undeveloped opportunities, while front country area may have greater density of roads, recreational development, and higher visitor use.

3.12 TRAVEL MANAGEMENT

In 2007 the City annexed 67 square miles of its MPA, south of the current city limits, to include an area bounded to the northeast and east by the Sierra Estrella Mountains and the Gila River Indian Community and to the west and southwest by the SDNM. A large network of roadways serves the travel management needs within the City and Maricopa County, coordinated by the City, MAG, and, in some cases, MCDOT and ADOT. The City has determined that the Parkway is needed to provide more direct access to the greater Phoenix metropolitan area for traffic to and from the new MPA near Mobile and the City of Maricopa.

The Parkway would enable the City to establish the necessary north-south corridors to move traffic efficiently in the region. The scope of the analysis for travel management resources includes a discussion of the current transportation network within the footprint of the action alternatives and also includes a 2-mile buffer area. The analysis describes the existing network in terms of state highways, county roads, municipal roads, BLM roads, utility company access roads, and other private roads, in addition to highway and road usage, including traffic counts, roadway capacity, and level of service (LOS).

3.12.1 SVPA Transportation Planning Background

The SVPA is projected to experience significant growth in the future and will need a transportation network to move commuters and goods on local and regional levels.

3.12.1.1 MAG—Interstate 8/10 Hidden Valley Transportation Framework Study (Completed 2009)

The Parkway is identified in the MAG 2040 RTP (MAG 2017b) as an illustrative project/ROW preservation project with no anticipated funding or completion date (Appendix O). Once funding is identified for the project, additional planning studies and public outreach will need to be completed by the City before construction begins.

The Parkway will improve connectivity to communities and to future roadway corridors in the study area. This section of the Final EIS describes the level of existing and future planning efforts for the proposed Parkway, Loop 303, and I-11. Loop 303 and I-11 will be discussed in Chapter 4 (Cumulative Effects) under the Reasonably Foreseeable Future Actions.

3.12.2 Sonoran Valley Parkway

The City accepted and incorporated recommendations from the I-8/I-10 Hidden Valley Transportation Framework Study (including the Proposed Parkway, Loop 303, and I-11), which identified the Parkway as an “Arizona Parkway.” This would be a non-freeway restricted access facility able to offer significantly greater travel capacity than that provided by major urban arterial.

The Land Use and Transportation Plan in the City of Goodyear General Plan supports providing transportation and transit system mobility and access. The City of Goodyear Transportation Master Plan also supports providing a well-functioning roadway network that effectively and efficiently serves Goodyear’s residents, visitors and employers (City 2014b).

3.12.3 Study Area

The study area for travel management is defined as the 2-mile radius around all action alternatives (Map Volume, Figure 3-16).

3.12.4 Highways and Road Descriptions

The following is a comprehensive list of all existing transportation systems within 2 miles of the project area. The systems described include state highways, county roads, BLM roads, utility company access roads, and other private roads in the study area.

3.12.4.1 State Routes/Highways

All three action alternatives (A, C, and H) and sub-alternatives (F and G) terminate and connect with SR 238 near Mobile. SR 238 is an east-west route maintained and managed by ADOT and connects the City of Maricopa with the Town of Gila Bend, a distance of roughly 50 miles. SR 238 connect to SR 347 to the east and SR 85 to the west. SR 238 accesses the SDNM and is commonly used as a route for residents of the southern part of the Phoenix metropolitan area to travel to southwestern Arizona and southern California via I-8.

3.12.4.2 Maricopa County Roads

The Major Streets and Routes Plan Policy, used by MCDOT (2011) to classify county streets, includes six classifications: expressways, principal arterials, minor arterials, major collectors, minor collectors, and local streets. Within the study area, there are 11 roads classified by Maricopa County: Ocotillo, Chandler Heights, Riggs, Perryville, Rainbow Valley, Reems, Patterson, and Bullard Roads, Cotton Lane, and Sarival and 99th Avenues (MCDOT 2011: Map 14).

On the north end, all three action alternatives connect to Rainbow Valley Road.

3.12.4.3 Bureau of Land Management Roads

There are more than 30 miles of BLM-inventoried unmaintained, dirt roads within the study area (Map Volume, Figure 3-16).

BLM routes in the study area are used for accessing recreational opportunities, agricultural fields, livestock operations, utility and communication facilities, and range and wildlife developments.

There are three linear utilities under existing BLM authorizations within the study area: the EPNG Pipeline, Transwestern Pipeline, and El Paso Corporation (El Paso) Transmission Line (Salt River Project 500 kilovolts [kV]). Each of these utility lines is located between the SDNM and Alternative A. The Komatke Road or (EPNG) Pipeline Road is an unpaved access road that parallel the lines. The public uses the unpaved (EPNG) Pipeline Road to travel to and from Mobile and the SR 85. This road runs northwest-southeast and generally parallels the eastern boundary of the SDNM.

3.12.4.5 Other Private Roads

Private roads are owned and maintained by a private individual, organization, or company, rather than by a government. Unauthorized use of the road is trespassing, and usual rules of the road may not apply. No known private roads intersect any of the action alternatives. There are several roads used to access private residences and agricultural lands, and the Butterfield Station Landfill.

3.12.4.6 Highways and Road Usage

Traffic volume is a component for determining what improvements are required on a highway or street facility. Traffic volumes are often expressed in terms of average daily traffic or design hourly volumes. Hourly volumes may be used to calculate the service flow rate and evaluate design alternatives.

3.12.4.7 Existing Traffic Volume (Counts)

Table 3-7 lists 2015 and 2017 annual daily traffic (AADT) traffic volumes by vehicles per day (vpd) for SR 238 and Rainbow Valley Road within the study area. No traffic counts are provided by ADO or MCDOT for other study area roads. SR 238 counters runs east to west between Mobile and SR 85.

Table 3-7. Existing Traffic Volumes

Route	Beginning	Ending	AADT
SR 238	Maricopa Road (7 miles west of Mobile)	Hidden Valley Road	2,041 vpd*
SR 238	Hidden Valley Road	Ralston Rd	3,803 vpd*
SR 238	Ralston Road	MP 43	5,953 vpd*
Rainbow Valley Road	At Ray Road	—	543 vpd†

* Source: ADOT (2017).

† Source: MCDOT (2015).

3.12.4.8 Access

No continuous system of pedestrian, bicycle, or equestrian facilities exist within the area of analysis. Only one fixed route bus service exists within the study area (Ajo/Gila Bend to Phoenix Connector). No other bus routes operate within the limits of Maricopa or Mobile. Valley Metro operates the public transportation system (bus and light rail) throughout Phoenix metropolitan area and surrounding cities. Valley Metro operates buses within the City but not in the SVPA. Paratransit is available as a complementary transportation service for qualified persons as required by the Americans with Disabilities Act. The closest paratransit service within the study area is the Ajo/Gila Bend to Phoenix Connector (SR 85).

The closest Greyhound bus station is in Casa Grande, and the closest taxicab companies serve Maricopa and Mobile from Chandler or Casa Grande. One shuttle service operates on an on-call basis from the Maricopa Amtrak station to the Phoenix metropolitan area.

A combination of highways, arterial streets, and BLM roads provide access to the BLM-administered lands within and surrounding the study area. Multiple unpaved BLM roads provide access to SDNM, BLM-administered lands available for dispersed recreation within Rainbow Valley, and the Sierra Estrella Wilderness.

3.13 SPECIAL DESIGNATIONS

The BLM manages special designations under the National Conservation Lands including national monuments, wilderness areas, and national historic or scenic trails (BLM 2005b). Other special designations include areas of critical environmental concern (ACECs). The Lower Gila Terraces and Historic Trails ACEC is in the vicinity of the project, however, all action alternatives occur solely on private land.

The overall acreages and summary of the resource values protected by each designation within the study area are presented in Table 3-8.

Table 3-8. BLM Special Designations in the Study Area

Designation	Acreage	Purpose of Designation
SDNM	486,400	Landscape-scale protection of unique natural and cultural resources
North Maricopa Mountains Wilderness Area	63,200	Wilderness resources
South Maricopa Mountains Wilderness Area	60,100	Wilderness resources
Sierra Estrella Wilderness Area	14,400	Wilderness resources
Anza NHT	N/A	Historic significance/interpretation

Source: BLM (2012a, 2012b).

3.13.1 Study Area

The study area includes three designated wilderness areas, one national monument, one NHT corridor, and the historic Butterfield Overland Stage Route (Map Volume, Figure 3-17).

3.13.2 Sonoran Desert National Monument

The SDNM contains approximately 486,400 acres of Sonoran Desert landscape located immediately west and south of the proposed Parkway (Map Volume, Figure 3-17), and was established by Presidential Proclamation 7397 on January 17, 2001. The SDNM RMP was completed in September 2012. Three Congressionally-designated wilderness areas, significant archaeological and historic sites, and remnants of several important historic trails are located in the SDNM. The SDNM is approximately 50 miles from the Phoenix metropolitan area, with visitation higher in the winter months.

3.13.3 Designated Wilderness Areas

There are three designated wilderness areas within the study area (Map Volume, Figure 3-17); two are inside the SDNM immediately west of all alternatives and one is in the Sierra Estrella Mountains, east of the study area. BLM manages these wilderness areas in accordance with the Maricopa Complex Wilderness Management Plan, Environmental Assessment, and Decision Record. These wilderness areas contain little to no evidence of surface disturbance, other than former vehicle ways and scattered prospect pits, the majority of which appear in the North and South Maricopa Mountains Wilderness Areas (BLM 1995).

3.13.3.1 North Maricopa Mountains Wilderness Area

The 63,200-acre North Maricopa Mountains Wilderness Area is located within the SDNM, west of the proposed Parkway, and includes roughly the northern one-third of the North Maricopa Mountains (Map Volume, Figure 3-17). The northern boundary is a combination of jeep trails, washes, grazing allotment division fences, and a prominent ridge. The southern boundary is on the historic Butterfield Overland Stage Route. The wilderness area is bounded by a 250-kV power line ROW to the west and by another jeep trail to the east. Most users approach the wilderness area from the west side of the SDNM, via SR 85 and the Gila Bend area.

3.13.3.2 South Maricopa Mountains Wilderness Area

The 60,100-acre South Maricopa Mountains Wilderness Area includes roughly the southern one-third of the Maricopa Mountains range, a low-elevation Sonoran Desert range and extensive desert plains. I-8 parallels the southern boundary of the wilderness area but offers no access to the wilderness. The northern boundary can be accessed from 83rd Avenue and primitive dirt roads south of SR 238, but active railroad tracks and ROWs prevent public crossings elsewhere. No roads lead to the western and eastern boundaries of the wilderness (Map Volume, Figure 3-17).

The eastern part of the wilderness has an isolated and screened mountainous interior formed by long ridges and isolated peaks separated by plains and washes. The western part is dominated by desert flats that front the east-west-trending Maricopa Mountains ridgeline.

3.13.3.3 Sierra Estrella Wilderness Area

The 14,400-acre Sierra Estrella Wilderness Area includes roughly one-fourth of the Sierra Estrella Mountains, and is bounded on the north and east by the Gila River Indian Community. The western boundary is a combination of a power line ROW and a jeep trail. The southern boundary is a wash located at the toe of a steep ridge (Map Volume, Figure 3-17).

3.13.5 National Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation

3.13.5.1 Juan Bautista de Anza National Historic Trail

The Anza NHT commemorates the route taken by Anza in 1775–1776, when he led a group of colonists from what is now Mexico to San Francisco Bay to found a presidio and mission for New Spain. Established in 1990, this congressionally designated historic trail administered by the NPS is approximately 1,200 miles long, extending from Nogales, Arizona, to San Francisco, California (NPS 1996). For lands outside NPS units, local land managers and property owners take the lead in implementing the trail and coordinate interpretation with the NPS. The Anza NHT is associated with the following three components:

- Historic Corridor—the area along the actual path traveled by the expedition.
- Recreational Trail—a modern recreational trail implemented by local land managers that generally parallels the historic trail corridor and is intended to be a continuous recreational trail from Nogales, Arizona, to the San Francisco Bay Area, California.
- Auto Tour Route—published and signed driving route that follows the historical corridor, connecting related historic sites.

3.13.5.2 Butterfield Overland Stage Route

On May 29, 2018 the NPS completed and submitted to the U.S. Congress a Special Resource Study pursuant to Section 7209 of Public Law [PL] 111-11. The nature and purpose of the trail is not defined but would be consistent with the National Trails System Act, which provides “for outdoor recreation needs of an expanding population” and promotes “the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air outdoor areas and historic resources of the nation.” No Federal Protection Components for the Butterfield Overland Stage Route have been identified in the study area.

The proposed Butterfield Overland Stage Route commemorates the routes pioneered by John Butterfield and the Butterfield Overland Stage Company as they traveled over the “ox-box route” between St. Louis,

Missouri, and Memphis, Tennessee, ending in San Francisco, California. Though the Butterfield Overland Stage Route is not designated an NHT, the LSFO RMP manages for preservation of the Butterfield Overland Stage Route on BLM-administered lands. The Butterfield Overland Stage Route is located near the southern terminus of the proposed Parkway, within the Anza NHT corridor (Map Volume, Figure 3-17). Similar to the Anza NHT, where the Parkway alternatives would cross the Butterfield Overland Stage Route, the land is privately owned in a heavily disturbed landscape adjacent to the Butterfield Station Landfill.

3.14 NOISE

Noise is generally defined as the undesired component of sound. Varying noise levels are described in terms of the equivalent constant decibel level. Equivalent noise levels (L_{eq}) are used to develop single-value descriptions of average noise exposure over various periods of time. L_{eq} values are not calculated as arithmetic averages but are based on a mean of the acoustic energy represented by a dB value. The mathematics of calculating L_{eq} values give greater weight to the higher noise level values than the lower noise level values. Average noise exposure ratings often include additional weighting factors for potential annoyance due to time of day or other considerations. Average noise exposure over a 24-hour period is often presented as a day-night average sound level (L_{dn}). L_{dn} values are calculated from hourly L_{eq} values, with the L_{eq} values for the nighttime period (10 p.m. to 7 a.m.) increased by 10 dBA to reflect the greater disturbance potential from nighttime noises.

Noise levels experienced by humans range from 40 dBA (equivalent to a quiet suburban area at night) to 85 dBA (the approximate noise level occurring 5 feet from a gas engine lawn mower). A 3 dBA change in noise level may be perceptible to most listeners, whereas a 10 dBA change may be perceived as a doubling of the noise level. Provided is a summary of the range of dBA levels encountered in the environment and examples of various noise sources for each range listed (Table 3-9).

Table 3-9. Typical dBA Levels

Characterization	dBA	Example Noise Conditions
Threshold of pain	130	Surface detonation, 30 pounds of TNT at 1,000 feet. Peak noise 50 feet behind firing position, M-16 and M-24 rifles.
	125	Mach 1.9 sonic boom under aircraft at 11,000 feet.
Possible building damage	120	Air raid siren at 50 feet.
Threshold of immediate NIPTS*	115	Commercial fireworks (5-pound charge) at 1,500 feet. F/A-18 aircraft takeoff with afterburners at 1,600 feet.
	110	Peak noise 50 feet behind firing position, .22 caliber rifle. Peak crowd noise, professional football game, inside open stadium.
	105	Emergency vehicle siren at 50 feet. Pile driver peak noise at 50 feet. Chainsaw (two-stroke gasoline engine) at 3 feet.
Threshold of immediate NIPTS*	100	Jackhammer at 10 feet. 1-mile-range fog horn at 30 feet.

Table 3-9. Typical dBA Levels (continued)

Characterization	dBA	Example Noise Conditions
Extremely noisy	95	Locomotive horn at 100 feet.
		2-mile-range foghorn at 100 feet.
		Large wood chipper processing tree branches at 30 feet.
8-hour Occupational Safety and Health Administration (OSHA) limit	90	Leaf blower at 5 feet.
		Jackhammer at 50 feet.
		Dog barking at 5 feet.
Very noisy	85	Gas engine lawn mower at 5 feet.
		Bulldozer, excavator, or paver at 50 feet.
		Personal watercraft at 20 feet.
		Pneumatic wrench at 50 feet.
	80	Forklift or front-end loader at 50 feet.
		Motorboat at 50 feet.
		Table saw at 25 feet.
		Vacuum cleaner at 5 feet.
Noisy	75	Idling locomotive at 50 feet.
		Street sweeper at 30 feet.
		Ocean beach with medium wind and surf.
	70	Leaf blower at 50 feet.
		1-mile-range foghorn at 1,000 feet.
		300 feet from busy six-lane freeway.
Moderately noisy	65	Typical daytime busy downtown background conditions.
		Typical gas engine lawn mower at 50 feet.
		Ocean beach with light wind and surf.
	60	Typical daytime urban mixed-use area conditions.
		Normal human speech at 5 feet.
		Typical electric lawn mower at 50 feet.
	55	Typical urban residential area away from major streets.
		Low noise electric lawn mower at 65 feet.
	50	Typical suburban daytime background conditions.
		Open field, summer night with numerous crickets.

Table 3-9. Typical dBA Levels (continued)

Characterization	dBA	Example Noise Conditions
Quiet	45	Typical rural area daytime background conditions.
		Suburban backyard, summer night with several crickets.
	40	Typical suburban area at night.
		Typical whispering at 1 to 2 feet.
	35	Quiet suburban area at night.
		Quiet whispering at 1 to 2 feet, low background noise conditions.
Very quiet	30	Quiet rural area, winter night, no wind.
		Quiet bedroom at night, no air conditioner.
	25	Quiet rural area, light wind
	20	Empty recording studio.
		Remote area, no audible wind, water, insects, or animal sounds.
	10	Audiometric testing booth.
Threshold of hearing, no hearing loss	0	

* NIPTS: noise-induced permanent threshold shift (permanent hearing damage).

Indicated noise levels are average dBA levels for stationary noise sources or peak noise levels for brief noises and noise sources moving past a fixed reference point. Average and peak dBA levels are not 24-hour L_{dn} values. Decibel scales are not linear. Apparent loudness doubles with every 10 dBA increase, regardless of the initial dBA level. Most adults have accumulated some hearing loss and have a threshold of hearing above 15 dBA. In occupational hearing conservation programs, a threshold of hearing between 20 and 30 dBA is considered normal.

3.14.1 Study Area

The study area is defined as a 56-square mile area surrounding all action alternatives (Map Volume, Figure 3-18).

According to FHWA regulations, traffic noise impact occurs when the predicted traffic noise level approaches or exceeds Noise Abatement Criteria (NAC) for the specified land use. Table 3-10 shows the FHWA-defined NAC for various land use categories.

Table 3-10. Noise Abatement Criteria

Land Use Category	Noise Level L _{Aeq1h} * dBA	Description of land Use
A	57 dBA (exterior)	Land on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks, or open spaces that are recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 dBA (exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, playgrounds, active sports areas, and parks
C	72 dBA (exterior)	Developed lands, properties, or activities not included in Categories A and B above.
D	--	Undeveloped lands.
E	52 dBA (interior)**	Residences, motels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR 772

Note: Noise abatement criteria are from FWA-defined land use categories and NAC (23 CFR 772).

L_{Aeq1h}* is the 1-hour equivalent to sound

** The interior sound level (activity) applies to 1) indoor activities for those parcels where an exterior noise sensitive activity is identified, and 2) those situations in which the exterior activities will not be affected by the noise, but the interior activities will be affected.

Assessing noise impacts is defined by the location of Category B land uses and other noise-sensitive land uses (such as Category C) located within 300 to 500 feet of the proposed ROW for the project, especially in urban areas. For projects in rural areas, such uses located within 1,000 feet of the proposed ROW are an acceptable approach to establish the affected environment and assess future environmental consequences.

Three Category B land uses are located within the 1,000-foot perimeter: residences, a school and a park (the eastern boundary of the SDNM). The study area is set at the perimeter of each 1-mile section crossed by each of the action alternatives. Category B land uses within the study area for noise include 44 detached single-family residences and/or mobile homes and one school. The noise measurement location icons (M1 to M6) in Figure 3-18 (Map Volume) indicate the general location of the residences. M1 is located in the vicinity of the Mobile Elementary, east of 99th Avenue and north of SR 238. M2 represents one residence located within Township 4 South, Range 2 East, Section 21 that lies within an undeveloped plat for Tangier Acres and approximately 0.5 mile north of SR 238. M3 represents one residence located in Township 3 South, Range 1 West, Section 21. M4 represents five residences located east of Bullard Avenue in Township 3 South, Range 1 West, Section 9. M5 represents 16 residences located east of 171st Avenue in Township 3 South, Range 2 West, Section 1. M6 represents five residences located east of Rainbow Valley Road in Township 2 South, Range 1 West, Section 35 and 16 residences located west of Rainbow Valley Road in Township 2 South, Range 2 West, Section 34.

Two commercial uses (Category C) exist within the study area. The Butterfield Station Landfill is located in Township 4 South, Range 1 East, Section 18, which is approximately 1 mile north of R1. Another commercial use is located in Township 3 South, Range 2 West, Section 10, approximately 1 mile west of Rainbow Valley Road.

3.14.2 Ambient Conditions

Short-term noise level measurements to describe the existing noise environment were completed in 2009. Measurements were taken between approximately 8:30 a.m. and 10:00 a.m. at the south end of the study

area near SR 238, and between approximately 11:30 a.m. and 2:30 p.m. at the north end of the study area, near the intersection of Riggs and Rainbow Valley Roads. Additional measurements were taken in the vicinity of the proposed action alternatives to the south and east.

The measurement locations shown in Figure 3-18 (Map Volume) are numbered sequentially from southeast to northwest, with the letter M for measurement as a prefix. Six total measurements were recorded at locations in the vicinity of four occupied houses, one demolished home site, and Mobile Elementary School located within the bounds of the noise analysis. A summary of each short-term noise level measurement is presented in Table 3-11.

Measured L_{eq} ranged from 61.6 to 68.5 dBA at M1, located in the vicinity of the Mobile Elementary School on the dirt shoulder approximately 20 feet north of the SR 238 westbound edge of the pavement. A train pass-by occurred on the Southern Pacific Railroad line, located approximately 175 feet south of SR 238, during the end of the second measurement sample interval and the beginning of the third measurement sample interval. Maximum noise levels of 81.6 and 84.2 dBA, respectively, were recorded. The 61.6 dBA L_{eq} recorded during the first measurement sample is more typical of a rural noise environment, although noise levels likely increase during sustained peak traffic periods in this location.

Measured L_{eq} ranged from 42.0 to 49.1 dBA at M2, located near the undeveloped Tangier Acres subdivision plat, approximately 0.5 mile north of M1 and east of 99th Avenue. A truck pass-by occurred on 99th Avenue during the beginning of the first measurement sample interval, and a maximum noise level of 67.7 dBA was recorded. The 42.0 and 45.1 dBA L_{eq} recorded during the second and third measurement samples, respectively, is more typical of a rural noise environment somewhat removed from any consistent traffic or other noise source.

Measured L_{eq} ranged from 39.7 to 48.8 dBA at M3, located near a detached single-family farm house that is approximately 3 miles south of Patterson Road and 0.5 mile east of Bullard Avenue. Wind gusts up to 9 mph occurred during the first measurement sample interval, and a maximum noise level of 65.7 dBA was recorded. The 43.1 and 39.7 dBA L_{eq} recorded during the second and third measurement samples, respectively, is more typical of a rural noise environment completely removed from any consistent traffic or other noise source.

Measured L_{eq} ranged from 52.9 to 61.4 dBA at M4, located near a detached single-family house on Patterson Road that is 0.5 mile east of Bullard Avenue. The range in recorded noise levels is typical of a suburban to urban residential noise environment, although this location is completely removed from any consistent traffic or other noise source. Noise events that occurred during the measurement period explain the increase in equivalent (L_{eq}) noise levels over those expected for a remote location. Dogs at the residence barked during the entire second measurement sample interval, and a maximum noise level of 70.2 dBA was recorded. Small-aircraft flyovers occurred during the first and third measurement sample intervals.

Measured L_{eq} ranged from 37.8 to 48.2 dBA at M5, located near a detached single-family house and two mobile homes east of 171st Avenue, 0.5 mile south of Hunt Highway and 1 mile east of Rainbow Valley Road. A small-aircraft flyover occurred during the beginning of the first measurement sample interval, and a maximum noise level of 66.5 dBA was recorded. The 41.7 and 37.8 dBA L_{eq} recorded during the second and third measurement samples, respectively, is more typical of a rural noise environment somewhat removed from any consistent traffic or other noise source.

Measured L_{eq} ranged from 38.8 to 47.0 dBA at M6, located near the demolished remnants of a detached single-family house on the southwest corner of Rainbow Valley and Riggs Roads. A car engine was idling in the background during the entire first measurement sample interval and the beginning of the second measurement sample interval. A maximum noise level of 56.5 dBA was recorded. The 41.4 and 38.8 dBA

L_{eq} recorded during the second and third measurement samples, respectively, is more typical of a rural noise environment without any consistent traffic or other noise source.

Table 3-11. Summary of Noise Levels (in dBA) at Monitoring Sites within the Study Area on August 20, 2009

Site ID*	Sample	Begin Time	End Time	L_{eq}	L_{min}	L_{max}
M1	1	8:28 a.m.	8:38 a.m.	61.6	37.1	78.2
	2	8:49 a.m.	8:59 a.m.	68.5	38.1	81.6 [†]
	3	9:02 a.m.	9:12 a.m.	66.3	35.5	84.2 [†]
M2	1	9:26 a.m.	9:36 a.m.	49.1	31.0	67.7 [‡]
	2	9:37 a.m.	9:47 a.m.	42.0	27.9	55.4
	3	9:48 a.m.	9:58 a.m.	45.1	31.7	55.4
M3	1	1:09 p.m.	1:10 p.m.	48.8	30.4	65.7 [§]
	2	1:20 p.m.	1:30 p.m.	43.1	23.4	58.3
	3	1:31 p.m.	1:41 p.m.	39.7	22.1	52.2
M4	1	1:52 p.m.	2:02 p.m.	53.2	42.6	61.8
	2	2:03 p.m.	2:13 p.m.	61.4	39.8	70.2 [¶]
	3	2:14 p.m.	2:24 p.m.	52.9	39.5	62.5
M5	1	12:11 p.m.	12:21 p.m.	48.2	24.9	66.5**
	2	12:32 p.m.	12:42 p.m.	41.7	26.1	55.4
	3	12:43 p.m.	12:53 p.m.	37.8	24.8	51.0
M6	1	11:27 a.m.	11:37 a.m.	47.0	45.1	54.1 ^{††}
	2	11:38 a.m.	11:48 a.m.	41.4	25.7	56.5 ^{††}
	3	11:49 a.m.	11:59 a.m.	38.8	24.7	54.2

Notes: L_{eq} = equivalent continuous noise level (slow response setting).

L_{max} = maximum sound level (slow response setting).

L_{min} = minimum sound level (slow response setting).

* Site ID indicating noise measurement location is shown in Figure 3-19.

[†] Southern Pacific Railroad train pass-by at 8:57 a.m.

[‡] Truck pass-by at 9:28 a.m.

[§] Winds reached a 9 mph maximum during measurement interval.

[¶] Dogs barking during entire measurement interval.

** Small-aircraft flyover at 12:11 p.m.

^{††} Car idling in background.

3.15 HAZARDOUS MATERIALS AND PUBLIC SAFETY

SWCA completed a Phase I Environmental Site Assessment (Phase I ESA) for Alternative A in 2007 and completed Phase I ESAs for Alternatives B and C in 2009 (SWCA 2007, 2009c, 2009d). The purpose of the Phase I ESAs was to perform environmental due diligence to identify potential sources of contamination that could affect construction or operation of the proposed action alternatives. Per American Society for Testing and Materials (ASTM) Standard 1527.00, an updated Phase I ESA would be required for the selected alternative.

The Phase I ESAs did not include activities such as inspections or sampling for the presence of asbestos-containing materials, radon or other radioactive substances, vapor intrusion, lead-based paint, non-hazardous wastes and materials, mold, or biological and medical wastes. No soil, air, or water samples were collected for these Phase I ESAs.

To achieve the objective referenced above, SWCA completed the following tasks:

- Reviewed intermittent topographic maps and/or aerial photographs dating from 1937 to 2009;
- Surveyed relevant documents in order to assess the project's physiography, including a review of the local hydrogeology and geology of the surrounding area;
- Reviewed available Federal and state regulatory databases; and
- Surveyed the area of the proposed action alternatives by walking on and driving around the study area, and visually surveyed the surrounding properties.

3.15.1 Study Area

The study area includes the 250-foot ROW for all action alternatives (Map Volume, Figure 3-19).and additional search distances specified in ASTM Standard E 1527-05 (ASTM 2005) (Table 3-12).

Table 3-12. Hazardous Materials Study Areas

Environmental Record Source	Approximate Minimum Study area (mile)
Federal NPL	1.0
Federal Delisted NPL	0.5
Federal CERCLIS	0.5
Federal CERCLIS NFRAP	0.5
Federal RCRA CORRACTS	1.0
Federal RCRA non-CORRACTS TSD	0.5
Federal RCRA Generators	250-foot ROW and adjacent properties
Federal IC/EC	250-foot ROW
Federal ERNS	250-foot ROW

Table 3-12. Hazardous Materials Study Areas (continued)

Environmental Record Source	Approximate Minimum Study area (mile)
State and Tribal Hazardous Waste Sites (NPL Equivalent)	1.0
State and Tribal Hazardous Waste Sites (CERCLIS Equivalent)	0.5
State and Tribal Landfill and/or Solid Waste Disposal Sites	0.5
State and Tribal LUST	0.5
State and Tribal Registered UST	250-foot ROW and adjacent properties
State and Tribal IC/EC	250-foot ROW
State and Tribal Voluntary Cleanup (VCP) Sites	0.5
State and Tribal Brownfield Sites	0.5

Notes:

CERCLIS = Comprehensive Environmental Response, Compensation, and Liability Information System

CORRACTS = Corrective Action Sites

ERNS = Emergency Response Notification System

IC/EC = Institutional Controls / Engineering Controls

LUST = leaking underground storage tank

NFRAP = no further remedial action planned

NPL = National Priorities List

RCRA = Resource Conservation and Recovery Act

TSD = Treatment, Storage, and Disposal

UST = underground storage tank

3.15.2 Records Review

Environmental database reports generated by Environmental Data Resources, Inc. (EDR), were used to access environmental records for the project and the surrounding properties. The proximity of listed facilities was reviewed to determine the potential effect these facilities may have on the Parkway. The 69 databases searched by EDR include those specified by ASTM Standard E 1527-05, several additional Federal and state databases, and databases proprietary to EDR. EDR updates its records in accordance with ASTM Standard E 1527-05 guidelines. Additional listed facilities that EDR has not identified may exist within a 1-mile radius. SWCA also accessed the ADEQ Interactive GIS eMaps website to search state environmental databases (ADEQ 2009e). Figure 3-20 shows the mapped locations of listed sites relative to the project area.

Mobile Elementary School was listed in the leaking underground storage tank (LUST) database. A leak was reported in late 1998, and the site was closed in June 2000, with soil levels meeting Tier 1 standards. This school is located at 42798 South 99th Avenue in Mobile, approximately 0.25 to 0.5 mile northeast and downgradient of the project.

Hamilton Homes Property was listed in the underground storage tank (UST) and LUST databases. A leak was reported in January 1999, and the site was closed in January 2007, with soil levels meeting Tier 1

standards. The tanks were permanently removed in May 2006. This site is located on the southwest corner of Rainbow Valley and Riggs Roads, possibly adjacent to and upgradient of the project.

Two additional sites were revealed by the ADEQ online database search, Butterfield Station Landfill and RM Cat Environmental Services Remediation Site. The Butterfield Station Landfill and Solid Waste Transfer Station is located downgradient of the project area, nearly adjacent to the east of the southern terminus of the Parkway. This active landfill (AZ Solid Waste Facility No. 07032700.01, EPA ID No. AZD983481813) is operated by Waste Management, Inc., and handles wastes, including: municipal solid waste, biosolids, construction and demolition debris, drums, industrial and special waste, and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or “Superfund”) waste.

RM Cat Environmental Services Remediation Area may be within the project area. RM Cat Environmental Services is now called Balfor Environmental, a company for which train derailments and spill cleanup represent a significant portion of business. This site is in the vicinity of railroad tracks and may indicate a past spill of unknown type and size. Aerial photography does not indicate large, disturbed soil areas in the mapped area, and no large, disturbed soil areas were observed during SWCA’s site reconnaissance. The site was listed with a status of “not active” in 2006.

EDR provided a list of sites and facilities that could not be mapped because of incomplete address or location information; these are called orphan sites. These facilities are listed in one or more regulatory agency databases and do not have enough address information to be located by EDR. The EDR report identified 61 orphan sites. All 61 listings were deemed to be not relevant because of their status and/or location with respect to the project area.

3.15.3 Site Reconnaissance

Site reconnaissance for the Phase I ESA site investigations for Alternative A of the Parkway was completed in 2007, and for Alternatives B and C of the Parkway in 2009 (SWCA 2007, 2009c, 2009d). The project area was accessed from public thoroughfares and by walking through areas that were inaccessible to vehicles.

The project area consists primarily of undeveloped desert land. It crosses maintained gravel roads and the (EPNG) Pipeline Road, and crosses under two power lines. The project area lies within the Rainbow Valley Sub-Basin, a large, valley-wide creosote flat. A small segment of the project area that crosses an agricultural field and irrigation canal that appear inactive. The project area contains other segments of minor development: in the north end, where the project corridor overlaps Rainbow Valley Road, there is a gravel/dirt roadway.

A recently constructed steel high-voltage electric transmission line crosses the project in Township 4 South, Range 1 East, Section 18. The area underneath and to the south of this line has been cleared of vegetation. A natural gas pipeline runs parallel to and south of the electric line and crosses through the project area in the same area as the power line. A maintenance road and a graded corridor of land separate the gas and electric lines.

No evidence of surface contamination from hazardous material spills or leaks, or petroleum-based liquids, was observed on the project. A small amount of debris was observed on the project, such as windblown trash, aluminum cans, glass bottles, broken cinder blocks, tires, and scrap metal.

Several wells were listed in the ADWR well database near the project area, but no wells were observed within the corridor. No evidence of historical structures was observed in the project area. The vicinity of the project area consists primarily of vacant, undeveloped desert land with unimproved roads.

3.15.4 Recognized Environmental Conditions

SWCA completed Phase I ESAs of the action alternatives in conformance with the scope and limitations of ASTM Standard E 1527-05 and certain additional limitations. Based on the information obtained during the site reconnaissance, conducted on September 19, 2007, and on May 27, 2009, and the information obtained through the activities of this Phase I ESA, excluding the limitations, one recognized environmental condition was identified. Portions of the project have been used for farming in the past; therefore, pesticides may be present in the soil on the project area from the historical use of pesticides.

3.15.5 Public Safety

The health and safety concerns present within the study area are both natural and human-caused, and may pose risks for individuals visiting or working within the area. Many of these issues, such as air quality, soils, recreation, and transportation, have been described more fully in the preceding sections.

3.15.6 Flood Control

As noted in Section 3.8, the action alternatives are in an area that receives shallow sheet flow and channelized flow during large storm events (V3 2007). The FIRMs for Maricopa County indicate that portions of the project area are located in 100- and 500-year floodplains, as designated by FEMA. Development within FEMA floodplains is strictly regulated by both the City and Maricopa County (Map Volume, Figure 3-9).

The City General Plan provides recommendations to address impacts from development within floodplains. These measures include buffer areas, filling/grading, and reinforced and/or elevated structure foundations. Available development options include dedicating potential flood areas as passive and/or active open space. If development and construction are chosen for the area, reducing flood impacts with flood abatement construction will be incorporated (City 2014a). Flood Control District of Maricopa County (FCDMC) enforces floodplain regulations, which ensure that structures or improvements in the floodplain will not cause adverse impacts to properties upstream or downstream (FCDMC 2018).

3.15.7 Area Hazards

Area hazards are dominated by geological and transportation hazards, as well as potential hazards associated with undeveloped desert lands in the region (Section 3.5.4 Geological Hazards).

3.15.7.1 Transportation Hazards

Residents of Mobile and the City of Maricopa have two viable options for commuting to and from the Phoenix metropolitan area. They can either use a combination of SR 238, SR 347, and I-10, or a combination of SR 85 and I-10. Routes can cause significant delays to the response time of emergency vehicles in the area because these routes are not direct. The City considers the Parkway essential to providing emergency access.

Residents of Mobile and others, use the unpaved maintenance access road that parallels the EPNG pipeline to travel to and from Mobile and the Phoenix metropolitan area. The maintenance road runs northwest-southeast and generally parallels the eastern boundary of the SDNM. There are four existing pipe natural gas pipelines buried directly beneath the maintenance road; in places they lie only inches beneath the surface of the road. This poses a safety threat to the vehicles driving over them.

There are two other unpaved access roads that are within the study area—the Transwestern Pipeline access road and the El Paso Transmission Line access road. These lines and access roads connect Mobile and Goodyear. None of the action alternatives intersect these access roads, and construction of the Parkway would alleviate traffic concerns along these roads.

3.16 SOCIAL AND ECONOMIC CONDITIONS

The scope of the analysis for social and economic resources includes a discussion of current social and economic data relevant to the Parkway, including population, demographics, employment, income, and taxes in the study area. State, county, municipal, and census tract data are also included to provide a comparative discussion for the study area.

Information in this section was obtained from various sources, including the U.S. Census Bureau (Census Bureau), State of Arizona, and Sonoran Institute Economic Profile System database (EPS), which uses different sources of information, such as Bureau of Economic Analysis (BEA) and Arizona state data.

3.16.1 Study Area

The study area includes the Cities of Goodyear and Maricopa, as well as Maricopa and Pinal counties (Map Volume, Figure 3-20).

3.16.2 Population and Demographics

Arizona experienced substantial population growth, with a 22% increase in the resident population between 2000 and 2010 (Table 3-13). Maricopa County's growth for the same period was in line with the state's population growth: 22% between 2000 and 2010. Pinal County's population growth rate between 2000 and 2010 was about four times that of the state and Maricopa County, at 83%. The City experienced growth of 245% between 2000 and 2010. Growth in the City of Maricopa increased by 3,247% between 2000 and 2010. Population growth projections (estimated 2015) for 2010-2030 are around 56% for the City and 37% City of Maricopa.

Table 3-13. Population Trends for the Sonoran Valley Parkway Project Study Area, 2000–2030

Location	1990	2000	2010	2030	% Change 1990–2010	% Change 2000–2010	% Change 2010–2030
Cities							
Goodyear	18,911	65,178	98,600**	154,200**	244.6	51.3	56.4
Maricopa	1,040	34,809	74,800**	102,600**	3,247.0	114.9	37.2
Counties							
Maricopa	3,072,149	3,751,410	4,506,949**	5,280,100**	22.1	20.1	17.2
Pinal	179,727	329,297	493,249**	604,800**	83.2	49.8	22.6
State							
Arizona	5,130,632	6,246,816	7,485,163**	8,535,900**	21.8	19.8	14.0

Sources: Arizona Department of Commerce (2009a, 2009b); Census Bureau (2010); City of Maricopa (2006)

** Population Projections, Medium Series (Arizona Office of Economic Opportunity 2015).

3.16.3 Economic Sectors and Employment

3.16.3.1 Income

Per capita income is a measure of the average monetary amount each resident would receive of the yearly income generated in the country if the annual city, county, or state income were divided evenly between each resident. Per capita income is usually reported in units of currency per year. Median household income divides income distribution into two equal groups—half with income above the median, and half with income below the median. Median income is based on all households and families over 15 years old with an income; household income is often the combination of two income earners pooling the resources and should be distinguished from individual earnings (as in per capita income).

In 2016, per capita income in Maricopa County and the Cities of Goodyear and Maricopa were in line with the state and nation (Table 3-14). Per capita income in Pinal County was 26% less than in Maricopa County. Median household income for Maricopa and Pinal counties were in line with the state and national averages. Median household income in the Cities of Goodyear and Maricopa were 31% and 25% higher than the state, respectively.

Table 3-14. Per Capita and Median Household Income by City and County, 2016

Location	Per Capita	Median Household
Cities		
Goodyear	\$29,263	\$74,417
Maricopa	\$25,800	\$68,888
Counties		
Maricopa	\$28,791	\$55,676
Pinal	\$21,982	\$51,190
State/Country		
Arizona	\$26,686	\$51,340
United States	\$29,829	\$55,322

Source: Census Bureau (2016).

3.16.3.1.1 COST OF LIVING

Although the City of Phoenix is not within the study area, the estimated cost of living in the city can be used as a proxy for the overall cost of living in Maricopa County, and to a lesser degree, Pinal County. In 2000, Phoenix was ranked fortieth most expensive metropolitan area in the United States; and in 1990, Phoenix was ranked seventieth. In 1990, living costs were an estimated 2% above the national average, compared with those in 2000, estimated at 4.5% higher (Vest 2002).

The cost of living for an area can be represented in the Cost of Living Index (COLI); a COLI is a theoretical pricing index that measures the relative cost of living over time and compares the difference in living costs between cities. The Bureau of Labor Statistics publishes the Consumer Expenditure Survey, which is used to evaluate the price data for categories such as housing, transportation, food, goods and services, and medical expenditures for cities and counties across each state. These expenditure categories are then weighted according to their overall importance in the average consumer's budget.

A COLI of 100 represents the state average. A number below 100 indicates that the city is less expensive than the state average, and anything above 100 indicates that it is more expensive than the state average. The 2018 COLI for Phoenix was 113.4; in 2010 it was 100.60; and in 2000 it was 101.80 (Morrison Institute for Public Policy 2012).

3.16.3.1.2 TAXES AND REVENUES

In 2018, Arizona ranks twenty-first in the United States in the Business Tax Climate Index in the context of corporate taxes, individual income taxes, sales taxes, unemployment insurance taxes, and taxes on residential and commercial property (State Tax Climate Index 2018). The state does have luxury, estate, personal, and corporate income taxes. Only those revenues that are clearly and concisely reported by the state or Federal government (i.e., property taxes, sales tax, etc.) were considered for the analysis. Revenue information was gathered for the county level.

3.16.3.1.3 PROPERTY TAX

Revenue from primary property tax collections helps fund state and local government budgets in terms of local government operating budgets and school and fire districts. Counties can use their allocation of property taxes to fund Superior Court systems, Sheriff's departments, transportation projects, and emergency services.

Arizona ratio of assessed valuation (percentage of market value) is 10% on residential properties and 25% on commercial properties (Arizona Tax Research Foundation 2009). By comparison, the ratio of assessed valuation on residential properties is 35% in Nevada and 100% in California. In fiscal year (FY) 2017, the net property valuation for Maricopa County was \$38.2 billion, and for Pinal County, it was \$2.2 billion (Arizona Department of Revenue [ADOR] 2017). The State distributed \$9.6 million to the City and \$5.9 million to the City of Maricopa for the same period (ADOR 2017).

3.16.3.1.4 HOUSING CHARACTERISTICS AND PROPERTY VALUES

The Rainbow Valley area is a rural area with low-density residential properties near the north end of the proposed Parkway and near the south end at SR 238 near Mobile. In 2016, there were an estimated 1.6 million housing units in Maricopa County, 13% of which were vacant. In Pinal County, 21% were vacant. Vacancy in the Cities of Goodyear and Maricopa were consistent with the counties (Table 3-15). Median home values in the City were 13% higher than Maricopa County, and both were higher than the Arizona median home value. The median home value in the City of Maricopa were 9% higher than Pinal County, but both were lower than the Arizona median home value.

Table 3-15. Housing Characteristics in the Study Area, 2016[†]

Location	Total Units	Occupied (%)	Median Value
Cities			
Goodyear	26,711	23,413 (87.7)	\$235,200
Maricopa	16,983	14,001 (82.4)	\$155,500
Counties			
Maricopa	1,680,412	1,465,840 (87.2)	\$204,900
Pinal	166,455	130,801 (78.6)	\$142,200
State			
Arizona	2,913,541	2,448,919	\$176,900

[†] Source: Census Bureau 2016

The Parkway concept originated to provide direct access from Goodyear to new proposed development within the annexed Sonoran Valley, however, with the economic downturn, plans for residential and commercial development were halted. This real estate trend occurred throughout metropolitan Phoenix and the nation during 2005 to 2009. Trends within the City indicate that the housing market is improving. Single-family housing building permits submitted to the City generally decreased from 2,758 at its peak in 2005, to 511 in 2010, with a slight uptick in 2011 to 594.

3.16.3.1.5 ECONOMICS RELATED TO RECREATION

Recreation and tourism are important contributors to the economic stability of the local area; economic benefits are derived from direct spending on food, gas, lodging, etc., but also from sales tax generated from visitor spending. Local and sales tax revenue is important in rural areas (Dean Runyan 2006). OHV use, camping, hunting and fishing, stimulate the economy through direct local expenditures on motorized vehicles, trailers, equipment and accessories, and insurance and maintenance costs (Arizona State Parks 2003). Local spending on food, gas, lodging, and souvenirs also indirectly benefits the region by supporting wages and income in the local economy.

Population growth in Arizona is partially attributed to the state's appeal as a year-round recreational destination that offers diverse opportunities for outdoor recreational activities including wildlife watching, birding, nature photography, hiking, biking, camping, OHV use, equestrian activities, and hunting. In 2017, Maricopa County had nearly \$14.6 billion in travel-generated earnings, while Pinal County had about \$400.3 million, and the state total was over \$22.7 billion (Arizona Office of Tourism 2018). Travel-generated tax revenue is the state's highest generator (Arizona Office of Tourism 2018).

AGFD has undertaken studies to quantify the economics of consumptive and nonconsumptive wildlife recreation (AGFD 2002; Southwick 2003). Table 3-16 below describes the annual consumptive (angling

and hunting) expenditures in Maricopa and Pinal counties. Table 3-17 describes the economics of consumptive and nonconsumptive wildlife recreation in Maricopa and Pinal counties.

Table 3-16. Angler and Hunter Expenditures, Maricopa and Pinal Counties

Expenditures	Maricopa County	Pinal County
Trip Expenditures	\$141,350,773	\$11,361,494
Equipment Expenditures	\$267,679,695	\$8,499,312

Source: AGFD (2002).

Table 3-17. Economic Impacts from All Watchable Wildlife Recreation in 2001

Expenditures*	Maricopa County	Pinal County
Number of full- and part-time jobs	6,603	949
Retail sales	\$368,334,416	\$50,897,041
Salaries and wages	\$192,817,949	\$26,614,902
State sales and fuel tax revenues	\$20,968,707	\$2,911,907
State income tax revenues	\$4,846,347	\$665,331
Federal income tax revenues	\$33,868,552	\$4,638,383

Source: Southwick (2003).

* Expenditures include County residents, residents from other counties, and non-residents.

Trip expenditures include purchases such as food, lodging, gas, equipment rental, ammunition, and use/access fees. Equipment expenditures include fishing gear, camping equipment, clothing, guns and rifles, and vehicle purchases.

Economic impacts in the study area from all watchable wildlife recreation generated approximately \$400 million in retail sales in 2001, supporting nearly 8,000 jobs. The total tax revenue from all watchable wildlife recreation of the study area was approximately \$65 million in 2001.

The economic benefits of consumptive and nonconsumptive recreation in Maricopa and Pinal counties is a multimillion-dollar economy that supports thousands of jobs. At a more local level, revenue generated directly from visitor spending is more difficult to quantify, however, several recreational destinations are located within or adjacent to the area of analysis and would draw a variety of recreationists to the area.

Specific information regarding economic generation in areas smaller than the county level does not exist for this area. Revenue-generating recreational activities that have required fees do not occur within the study area.

3.16.3.1.6 ECONOMICS RELATED TO LIVESTOCK GRAZING

As stated in Section 3.10, the Parkway under all alternatives, would intersect two existing allotments. The actual year-long use on these two allotments varies from year to year, based on resource and livestock market conditions.

The Federal grazing fee, is adjusted annually and is calculated by using a formula originally set by Congress in the Public Rangelands Improvement Act of 1978. Under this formula, as modified and extended by a presidential EO issued in 1986, the grazing fee cannot fall below \$1.35 per AUM; also, any fee increase or decrease cannot exceed 25% of the previous year's level. An AUM is the amount of dry forage required to sustain one "animal unit" for one month. In Arizona, BLM grazing allotments are classified as perennial, ephemeral, or perennial-ephemeral. In 2018, the grazing fee are \$1.41 per AUM.

The Beloit Allotment is located on 101,111 acres of BLM-administered land and typically has approximately 280 cattle for grazing, and the current AUMs are 2,988. The Conley Allotment is located on 91,018 acres of BLM-administered land. The current AUMs for the Conley Allotment are 4,158 (BLM 2018).

3.16.3.2 Employment

In 2016, total employment in the two Cities of Goodyear and Maricopa was 51,445; it was 2.01 million in the two-county (Maricopa and Pinal) study area (Table 3-18). The total employment in Maricopa and Pinal counties represented 70% of total state employment. In both cities, counties, and the state, the "education, health, and social services" sector was the top industry for employment in 2015. This industry accounts for 21% of employment in both counties and 24% in the City of Maricopa and 24% in the City of Goodyear.

Table 3-18. Employment by City and County, 2016

Industry	City		County		State
	Goodyear	Maricopa	Maricopa	Pinal	Arizona
Agriculture, forestry, fishing, hunting, mining	232	472	12,157	4,766	43,301
Construction	1,828	1,074	126,789	8,559	191,422
Manufacturing	1,896	2,162	142,891	13,214	206,492
Wholesale trade	938	407	48,587	2,514	67,141
Retail trade	4,474	2,089	230,435	16,557	352,405
Transportation	2,522	1,063	96,421	7,057	142,381
Information	524	577	36,593	2,359	51,341
Finance, insurance, real estate	2,409	1,968	183,266	8,939	234,763
Professional, scientific, management, administrative	2,912	2,276	245,304	13,892	345,614

Table 3-18. Employment by City and County, 2016 (continued)

Industry	City	County		State	
	Goodyear	Maricopa	Maricopa	Pinal	Arizona
Education, health, and social services	7,375	3,873	394,682	30,043	637,860
Arts, entertainment, recreation	2,070	2,472	187,330	15,032	313,540
Public administration	2,532	1,374	92,148	12,166	150,694
Other	1,073	853	74,536	5,827	142,418
Total	30,785	20,660	1,871,139	140,965	2,879,372

Source: EPS (2015).

3.16.3.3 Unemployment

In 2016, unemployment was lowest in the City, at 3%. The City of Maricopa had the second lowest unemployment rate at 4%. Unemployment rates in Maricopa and Pinal counties (4% and 5%, respectively) were similar to the state and national unemployment rates (5% and 7%, respectively) (Census Bureau 2016).

3.16.4 Environmental Justice

This section identifies and describes the potential for environmental justice (EJ) impacts as a result of the construction of the proposed Parkway. EJ is defined as the fair treatment and meaningful involvement of all people—regardless of race, ethnicity, or income level—in environmental decision-making. EJ programs promote the protection of human health and the environment, empowerment by means of public participation, and the dissemination of relevant information to inform and educate affected communities. Consideration of EJ issues is mandated by EO 12898, which was published on February 11, 1994.

The EPA defines a community with potential EJ populations as one that has a greater percentage of minority or low-income populations than an identified reference community. Minority populations are those populations having 1) 50% minority population in the affected area or 2) a significantly greater minority population than the reference area (EPA 1994). The EPA has not specified what percentage of the population can be characterized as “significant” to define EJ populations. For this analysis, it is assumed that if the affected area minority and/or poverty status populations are considerably higher than those of the reference area, there is likely an EJ population of concern. Low-income populations were defined as those individuals who are considered living below poverty levels. The Census Bureau defines poverty-level thresholds for individuals and a family of four as income levels below \$11,756 and \$24,944, respectively (Census Bureau 2017).

The methodology included assessing the presence and percentage of minority and low-income populations in the study area and determining whether those communities would experience disproportionately high and adverse impacts from the proposed project using Census Bureau data for the state, county, municipal, and census-tract level. The reference populations were determined to be the Cities of Goodyear and Maricopa. Both cities are located within the area of analysis and are adjacent to the proposed Parkway alternatives. By comparison, the City of Maricopa had the highest minority population, with 27%, followed

by the City of Goodyear (24%), whereas the counties of Pinal (20%) and Maricopa (21%) were similar to the state (19%).

The census tracts were used to determine whether populations residing in the affected area constitute a potential EJ population. This was done by comparing minority statistics for the census tracts with those reported for the Cities Goodyear and Maricopa. A potential EJ population was determined to exist in the census tracts if the minority population is considerably more (greater than 10% difference), or exceeds 50%. Table 3-19 summarizes these proportions for the 16 census tracts within the area of analysis. The potential EJ populations located closest to the proposed Parkway are located between approximately 4 and 13 miles of the project area.

Results of census-tract population trends show three census tracts with a higher concentration of minority populations representing over 50% of the total census-tract population. These census tracts are 9410, 9411, and 9413. Two census tracts had a meaningfully higher minority population than their reference population. These two census tracts are 17.07 and 17.11. In total, five census tracts contain an EJ population.

Table 3-19. Minority Population by Race and Ethnicity, 2016

Location	Total Population	White Alone	Black or African American	American Indian	Asian	Native Hawaiian
<i>Census Tracts</i>						
Census Tract 7233.04	4,417	4,003	128	11	0	0
Census Tract 7233.06	5,670	4,029	733	319	10	11
Census Tract 9410*	4,158	351	351	3,031	39	0
Census Tract 9411*	47	11	0	36	0	0
Census Tract 9413*	6,153	1,561	19	3,871	124	29
Census Tract 17.01	986	873	0	0	44	0
Census Tract 17.02	2,758	2,142	217	8	171	50
Census Tract 17.03	1,878	1,350	93	23	90	61
Census Tract 17.04	6,720	4,669	642	332	318	0
Census Tract 17.05	6,717	5,058	603	155	326	0
Census Tract 17.06	4,420	3,085	501	100	150	0
Census Tract 17.07	5,660	2,974	1,292	175	450	23
Census Tract 17.08	6,431	5,391	584	28	83	0

Table 3-19. Minority Population by Race and Ethnicity, 2016 (continued)

Location	Total Population	White Alone	Black or African American	American Indian	Asian	Native Hawaiian
Census Tract 17.09	3,772	2,566	285	46	206	28
Census Tract 17.10	4,809	3,999	422	25	39	0
Census Tract 17.11	2,369	1,906	249	4	24	0
<i>Cities</i>						
Goodyear	72,629	54,984	6,940	756	3,269	187
Maricopa	45,473	33,129	4,888	896	1,857	162
<i>Counties</i>						
Maricopa	4,088,549	3,214,001	216,064	77,142	150,074	8,425
Pinal	397,604	317,989	18,223	20,889	6,974	1,375
<i>State</i>						
Arizona	6,728,577	5,234,833	289,329	296,057	208,586	13,457

Source: Census Bureau 2016.

Gray highlight indicates the percentage of the minority population is higher than the reference populations

Note: people of Hispanic or Latino origin may be of any race, therefore, it is not included when considering whether a potential EJ community is present.

Families and persons are classified by the Census Bureau as below poverty level if their total family income or unrelated individual income is less than the poverty threshold specified for the applicable family size, age, and number of related children under 18 years of age. Poverty status is determined for all families. For persons not in families, poverty status is determined by their income in relation to the appropriate poverty threshold.

Within the selected census tracts that compose the study area, four census tracts reported a percentage of the population below the poverty level higher than the reference populations. The census tracts are 7233.06, 9410, 9413, and 17.01 (Table 3-20) (Census Bureau 2016).

Table 3-20. Low-income Population by Area, 2016

Location	Population Below Poverty Level	Population Below Poverty Level (%)
<i>Census Tracts</i>		
Census Tract 7233.04		13.1
Census Tract 7233.06	3,374	59.5

Table 3-20. Low-income Population by Area, 2016 (continued)

Location	Population Below Poverty Level	Population Below Poverty Level (%)
Census Tract 9410	1,588	38.2
Census Tract 9411	-**	0**
Census Tract 9413	1,464	23.8
Census Tract 17.01	203	20.6
Census Tract 17.02	309	11.2
Census Tract 17.03	210	12.4
Census Tract 17.04	228	3.4
<i>Census Tracts</i>		
Census Tract 17.05	443	6.6
Census Tract 17.06	314	7.1
Census Tract 17.07	272	4.8
Census Tract 17.08	244	3.8
Census Tract 17.09	181	4.8
Census Tract 17.10	216	4.5
Census Tract 17.11	47	2.0
<i>Cities</i>		
Goodyear	4,939	6.8
Maricopa	2,501	5.5
<i>Counties</i>		
Maricopa	494,714	12.1
Pinal	46,917	11.8
<i>State</i>		
Arizona	867,984	12.9

**This information is likely unavailable due to the small population size of the census tract (pop. 47) to protect privacy.

Gray highlight indicates the percentage of population below poverty level is higher than the reference populations.

4 ENVIRONMENTAL EFFECTS

4.1 INTRODUCTION

This chapter presents the likely direct and indirect impacts on the human and natural environment that could occur from implementing the alternatives presented in Chapter 2, Alternatives. This Chapter is organized by topic, similar to Chapter 3, Affected Environment.

The analysis uses existing data, appropriate scientific methodologies, and professional judgment. The analysis takes into account the voluntary City-committed design features described in Chapter 2 and Appendix R. Impacts from actions to be carried out under more than one alternative are discussed under the first applicable alternative. This discussion is then referenced under the other pertinent alternatives.

4.1.1 Types of Impacts to Be Addressed

This chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this Final EIS. This chapter includes definitions of impact thresholds for each resource, methods used to analyze impacts, and the analysis methods used for determining cumulative impacts. Table 4-1 provides standard definitions of degree and duration of impact that are broadly applicable to all resources.

Table 4-1. Standard Resources Impact Description

Description Relative to Resource	
Type	
Adverse	A change that moves the resource away from a desired condition or detracts from its appearance or condition.
Beneficial	A change that moves the resource toward a desired condition or improves its appearance or condition.
Context	
Site-specific	Impacts would occur in the footprint of the 250-foot ROW.
Local	Impacts would occur in the Rainbow Valley.
Regional	Impacts would occur on lands administered by the BLM Lower Sonoran Field Office.
Magnitude	
No Impact	Would not produce measurable changes in baseline condition of the resource.
Negligible	Impacts would occur, but no measurable changes in baseline conditions would occur.
Minor	Impacts would occur, but resources would retain existing character and overall baseline conditions.
Moderate	Impacts would occur, but resources would partially retain existing character. Some baseline conditions would remain unchanged.
Major	Impacts would occur that would create a high degree of change within the existing resource character and overall condition of resources.

Table 4-1. Standard Resources Impact Description (Continued)

Description Relative to Resource	
Duration	
Short-term	Up to 3 years
Long-term	Greater than 3 years

The impacts expected under an alternative have been measured against the impacts projected to occur under the No Action Alternative, which is the baseline for purposes of comparison of the alternatives. Whenever possible for a given resource, quantitative values are assigned as a means of objectively and accurately assessing the scope and intensity of potential impacts. For certain resources such as air, these values will be accepted regulatory standards such as NAAQS, or for resources such as water or soils, they may be standard units of measurement such as acres of land or acre-feet of water.

The following section defines and clarifies the concepts and terms used in this Final EIS when discussing the impacts assessment. The terms “impact” and “effect” are used synonymously.

Only those resources and resource uses that would potentially be impacted by any of the alternatives are brought forward for detailed analysis and discussed in Chapter 4.

4.1.2 Direct and Indirect Impacts

Direct impacts are attributable to implementation of an alternative that affects a specific resource, and occur at the same time and place. Indirect impacts can result from one resource affecting another (e.g., soil erosion and sedimentation affecting water quality) or can occur later in time or removed in location, but can be reasonably expected to occur.

The analysis in this chapter provides a quantitative or qualitative comparison (dependent on available data and nature of the impact) between alternative impacts and establishes the severity of those impacts in the context of the existing environment. The discussion of each resource includes the disclosure of residual impacts, irreversible and irretrievable commitment of resources, and the short-term uses versus the long-term productivity. These required disclosures are explained in the sections below. All environmental consequences direct and indirect impact discussions are bounded by the analysis area, defined for each resource or issue.

4.1.3 Cumulative Impacts

If the actions under each alternative have no direct or indirect effect on a resource, then the cumulative impacts on that resource are not addressed.

Cumulative impacts discussions are bounded both geographically and temporally. All cumulative impact discussions may be bounded by a unique cumulative effects analysis area (CEAA). Each resource analysis area for cumulative impacts is described below in the cumulative impacts section (Section 4.17, Cumulative Impacts).

4.1.3.1 Residual Impacts

The residual impacts section discloses the effectiveness of proposed BMPs, stipulations, and City-committed design features and identifies any remaining impacts to each resource.

4.1.3.2 *Irretrievable and Irreversible Commitments of Resources*

Irreversible and irretrievable commitments of resources are disclosed in this chapter. Irreversible and irretrievable impacts are those impacts that would result in changes to the environment that cannot be reversed, reclaimed, or repaired.

4.1.3.3 *Relationship of Short-term Uses to Long-term Productivity*

This section describes how the short-term uses would affect the long-term productivity of a given resource.

4.1.4 Regulation Requirements, Design Features and Monitoring Measures

All Parkway operations would comply with pertinent state, Federal, and local laws, ordinances, regulations, and standards. In addition, Appendix P summarizes existing state, Federal, and local requirements that would apply to any of the alternatives. Regulatory requirements, impact and monitoring measures, and voluntary City-committed design features particular to each resource are addressed in Appendix R.

4.1.5 General Analytical Assumptions, Guidelines, and Notes

The following are the general assumptions used for assessment under all alternatives. Assumptions associated with a given resource are included within the impact analysis for that resource.

- The analysis fully addresses the environmental impacts of constructing Phase I (two lanes of the Parkway), and includes consideration, based on current information, of up to four additional lanes if needed in the future. Expansion beyond a two-lane Parkway would require further authorizations from the BLM and would be subject to additional environmental review.
- For all action alternatives, direct and indirect impacts are considered in terms of Phase I construction, which would consist of a two-lane road within the 250-foot ROW.
- Indirect effects are considered for the potential future expansion to four or six lanes based on currently available information. The timing of additional lanes is not currently known. Consideration of direct effects for any additional lanes would be assessed when additional environmental analysis is performed for future project phases (Section 2.5.1).
- Acreages were calculated using GIS technology; there may be slight variations in total acres between resources. These variations are negligible and do not affect analysis.
- All acreages and percentages presented in this chapter pertain to all lands in the resource value area of analysis, regardless of ownership/management, unless otherwise specified.

4.2 AIR RESOURCES AND CLIMATE CHANGE

4.2.1 Analysis Area, Approach and Assumptions

Direct and indirect impacts to existing air quality resulting from the Parkway are analyzed within the bounds of an analysis area consisting of a radius of 10-miles around all action alternatives (Map Volume, Figure 3-1). This area of analysis has been selected to account for potential air quality impacts to existing areas of frequent and extended exterior use (receptors) in the project area. The environmental consequences analyzed consider the compatibility of the alternatives with both existing receptors and applicable planning documents governing the use of project lands as they relate to receptors.

Conformity applies to transportation plans in areas that do not meet or previously have not met air quality standards for regulated pollutants. On June 27, 2018, the MAG Regional Council made a Finding of

Conformity on the FY 2018-2022 Transportation Improvement Program (TIP) (MAG 2017c) and 2040 MAG RTP (MAG 2017b) as approved by the Sun Corridor Metropolitan Planning Organization Executive Board on June 19, 2018. A Finding of Conformity was made previously on the MAG 2040 RTP and the FY 2018-2022 TIP on October 12, 2017. On July 17, 2018, the FHWA made a conformity finding of the 2018-2022 TIP and the MAG 2040 RTP.

It is assumed that no uses other than transportation are planned in the 250-foot ROW. Impacts to receptors resulting from the No Action Alternative and from implementation of the Parkway are discussed relative to the Finding of Conformity.

To the extent that the Parkway would result in motor vehicle traffic being displaced from existing dirt roads onto a newly constructed paved Parkway, PM_{10} contributions associated with those existing dirt roads would be expected to decrease over the long-term across the analysis area.

Decreases in O_3 contributions due to shorter travel distances on the Parkway may result in a decline in overall O_3 contributions in the analysis area. However, the Parkway would likely result in increased traffic volume in the analysis area over the long-term, which may off-set any reduction in O_3 contributions.

4.2.2 No Action Alternative

The No Action Alternative assumes that the Parkway would not be approved; however, other transportation improvements identified in the City Transportation Master Plan (City 20014b) would occur, including the expansion of the local roadway network. Dispersed outdoor recreation including OHV use would continue. Drivers seeking to travel through the analysis area would seek alternate routes. If development occurs in the area, there would be multiple alternate routes, the impact of the No Action Alternative to air resource and climate change would cause an increase in PM_{10} and O_3 . The impact of the No Action Alternative to air resources and climate change would be adverse, minor, and long-term since a legal means to reach SR 238 or the City would be longer in distance than it would be if the Parkway would be constructed, thus resulting in higher vehicle miles traveled (VMT) and increased emissions (Diagram 6).

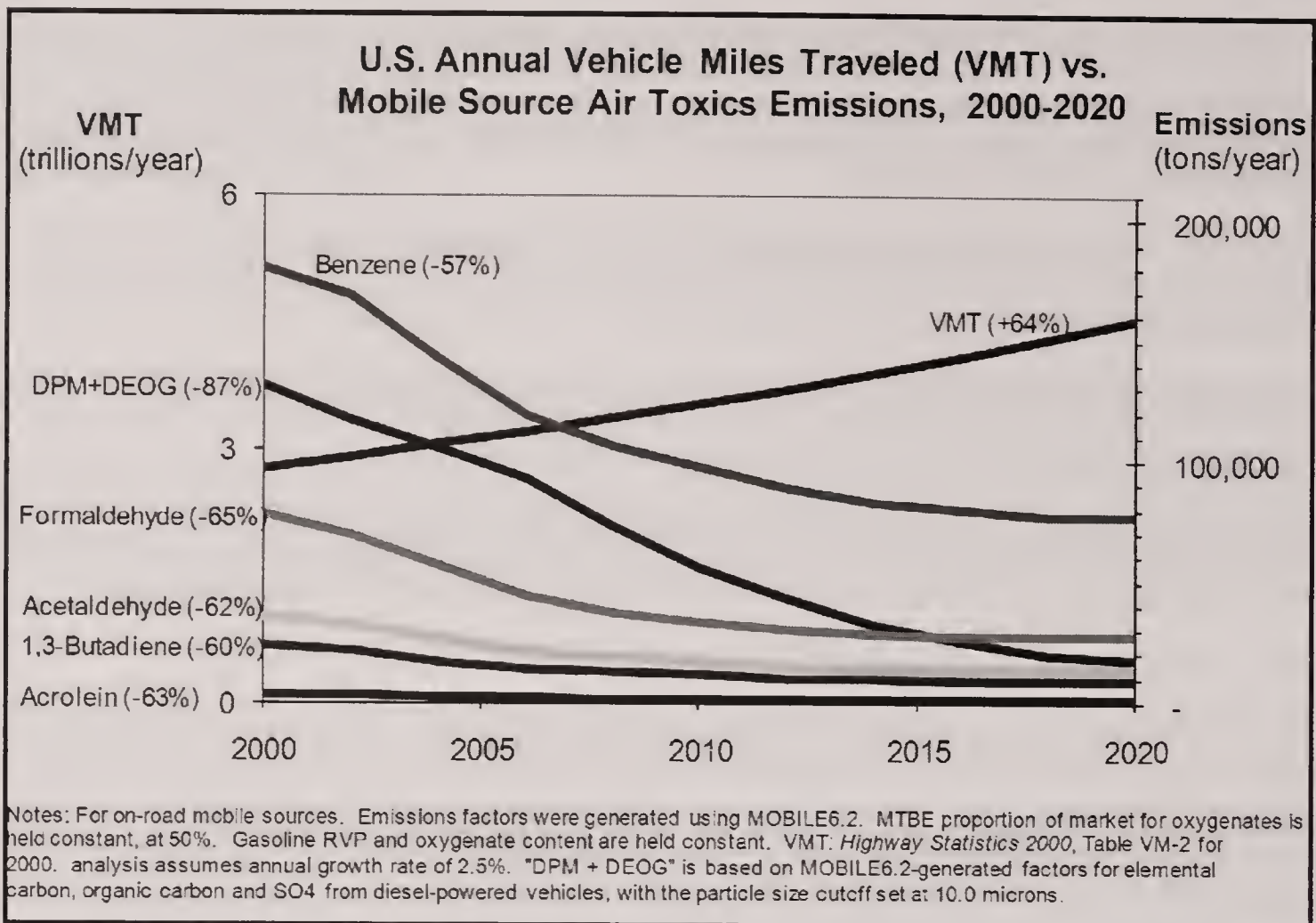


Diagram 6. U.S. Annual Vehicle Miles Traveled vs. Mobile Source Air Toxics Emissions, 2000-2020

No pollutants, except for PM₁₀, and O₃, experienced exceedances of the NAAQS from the most recent reporting years 2015 to 2017 at that site (Table 3-2). The PM₁₀ exceedances have been flagged as exceptional events. In accordance with the EPA's exceptional events policy, once approved these data are not used in determining compliance with the NAAQS. It is not likely that any violations of air quality standards would occur due to the No Action Alternative.

4.2.3 Impacts Common to all Action Alternatives

4.2.3.1 Phase I

A two-lane road is proposed for a width of 44 feet, which includes a 28-foot-wide paved surface with 8-foot-wide graded shoulders. The estimated VMT is 377,280, 434,880, and 438,720 for Alternatives A, C, and H, respectively. The estimated emissions from the initial construction phase are presented for comparison in Table 4-2.

Table 4-2. Estimated Emissions from Phase I, in Tons per Year

Alternative	CO	NO ₂ *	VOCs*	SO ₂ *	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	CO ₂ e*
A	487.8	293.7	63.8	1.1	15.8	12.2	116,577	4.2	105,853
C	562.2	338.5	73.6	1.3	18.2	14.0	134,375	4.9	122,013

Table 4-2. Estimated Emissions from Phase I, in Tons per Year (continued)

Alternative	CO	NO ₂ [†]	VOCs [†]	SO ₂ [†]	PM ₁₀	PM _{2.5}	CO ₂	CH ₄	CO ₂ e*
H	567.2	341.5	74.2	1.3	18.4	14.2	135,561	4.9	123,091
BLM Preferred	487.8	293.7	63.8	1.1	15.8	12.2	116,577	4.2	105,853

* Value reported in metric tons.

4.2.3.2 Additional Phase(s)

Additional phases of construction (up to four additional lanes) may be added as warranted (MAG 2017b). For this expansion, the Parkway would have a total width of 200 feet, including a 112-foot median separating two 28-foot-wide paved surfaces with 8-foot-wide graded shoulders. Based on the AADT for a four-lane Parkway at 55 mph, a maximum of 48,000 vehicles per day is expected for all action alternatives.

If expanded to six lanes, the Parkway width would be 200 feet, which includes an 84-foot median separating two 42-foot-wide paved surfaces with 8-foot-wide graded shoulders. Based on the AADT for a six-lane Parkway at 55 mph, a maximum of 72,000 vehicles per day is expected for all action alternatives.

Impacts from the additional phase(s) cannot be accurately quantified at this time. However, as discussed in Section 3.2, the project alternatives considered must be consistent with state and local transportation plans and demonstrate that they would not adversely affect the attainment of the primary and secondary NAAQS for criteria pollutants. When design details for the six-lane construction are known, conformity would be determined at that time, as required by the CAA and BLM Information Bulletin 2014-84 (BLM 2014).

MAG is required to update the RTP every 4 years and may amend the RTP as a result of changes in Federal, state, and local funding, and recommendations from major transportation studies. At this time, the six-lane scenario will remain as an illustrative project in the RTP and will not be included in future modeling scenarios/conformity analysis until warranted or transportation funding for the specific project has been identified (MAG 2017b).

4.2.3.3 Air Quality Receptors

As described in Section 3.2, land use types within the air quality analysis area include detached single-family residences and/or mobile homes, one school, and several undeveloped parcels. The approximate distance of the action alternatives to the nearest land use by type is summarized in Table 4-3.

Table 4-3. Proximity of Air Quality Receptors to the Action Alternatives, Closest Receptor Location by Type and Potential Impacts

Affected Land Use Type		Alternative A		Alternative C		Alternative H		Sub-Alternative F		Sub-Alternative G		BLM Preferred Alternative	
Residential		No.	Location	No.	Location	No.	Location	No.	Location	No.	Location	No.	Location
Detached single-family and mobile homes		1	2,800 ft.	16	At ROW	2	At ROW	1	At ROW	1	7,500 ft.	2	2,800 ft. & 7,500 ft.
Schools		1	2,400 ft.	1	2,400 ft.	1	2,400 ft.	1	1,400 ft.	1	6,000 ft.	1	6,000 ft.
Outdoor Recreation		Various locations throughout analysis area.		Various locations throughout analysis area.		Various locations throughout analysis area.		Various locations throughout analysis area.		Various locations throughout analysis area.		Various locations throughout analysis area.	

4.2.3.4 Consistency with Local Transportation Plans

Parkway alternatives considered must be consistent with state and local transportation plans and demonstrate that they would not adversely affect the attainment of the primary and secondary NAAQS for criteria pollutants. The implementation of all alternatives and sub-alternatives (except for the six-lane Parkway) meet the stated goals and objectives of the City General Plan (City 2014a), the MAG 2040 RTP (MAG2017b), and the SIP via Federal statute (40 CFR 51), seen in Table 4-4.

Table 4-4. Consistency of the Project with Local Transportation Plans

Plan	Goals/Objectives/Policy	Consistency Determination
Sonoran Valley Planning Area City of Goodyear General Plan Amendment	Recognizes the need to “provide southern vehicular access and mobility for the forecasts for growth in the West Valley, and the limited connectivity that currently exists in Western Maricopa County” (City 2007).	Consistent because the General Plan was amended to provide for Parkway, infrastructure, and services expansion in Rainbow Valley. Phase I planned facility is a two-lane minor collector with future expansion to six-lane major arterial.
MAG RTP	Goal # 2: Access and Mobility discusses providing accessible, mobile, and modal choices for residents, businesses, and for the economic development of the region, including maintaining an acceptable and reliable LOS (MAG 2017b).	The air quality conformity analysis determined a Finding of Conformity for the FY 2018–2022 MAG TIP and 2040 MAG RTP.
City of Goodyear Master Transportation Plan	Goal A: a well-functioning roadway network that effectively and efficiently serves Goodyear’s residents, visitors, and employers Goal B: a community linked internally and externally with adequate transit service to meet the needs of its residents, workers, and visitors (City 2014b).	Consistent because the Master Transportation Plan provides for a parkway within the area and is identified as a roadway improvement with two-lanes-median-two-lanes.

4.2.4 Alternative A, Proposed Action, Direct and Indirect Impacts

Based on length (approximately 16 miles) and the AADT, the maximum estimated VMT for the two-, four- and six-lane Parkway scenarios is 377,280, 754,560, and 1,131,840 VMT, respectively.

4.2.4.1 Phase I

The nearest receptor, which is located at the Mobile Elementary School, is 2,400 feet from Alternative A. The operation of Alternative A may result in indirect air quality impacts to existing and planned receptors if the Parkway creates land use amendments brought on by development interest. Concentrations of ambient pollutants would increase from existing ambient levels due to Parkway peak hour traffic; however, because of the relatively large distance to the nearest receptor and the current air quality status of the analysis area, the NAAQS would be attained. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area creating the potential for increases in local pollutant concentrations. The impact for sensitive receptors would be long-term but negligible.

4.2.4.2 Additional Phase(s)

Impacts from the additional phase(s) cannot be quantified at this time. The Parkway alternatives considered must be consistent with state and local transportation plans and demonstrate that they would not adversely affect the attainment of the primary and secondary NAAQS for criteria pollutants. When design details for the additional lane construction are known, conformity would be determined.

However, with a greater number of lanes and an increase in vehicular traffic, it can be expected that the level of emissions will be greater than during the operation of the two-lane road. The operation of additional lanes in Alternative A may result in indirect air quality impacts to existing and planned receptors if the additional lane construction creates further land use amendments brought on by development interest. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area, creating the potential for increases in local pollutant concentrations.

4.2.5 Alternative C, Direct and Indirect Impacts

Based on length (approximately 18 miles) and the AADT, the maximum estimated VMT for the two-, four- and six-lane Parkway scenarios is 434,880, 869,760, and 1,304,640 VMT, respectively.

4.2.5.1 Phase I

Based on the analysis in Section 4.2.3, emissions from the Phase I construction of Alternative C would not be expected to cause or contribute to a new violation.

The impacts to existing receptors under Alternative C would be similar to those described for Alternative A, except near a group of single-family homes located east of Bullard Avenue (Map Volume, Figure 3-1). The ROW for Alternative C is within several feet of these receptors. Concentrations of ambient pollutants would increase from existing ambient levels due to Parkway peak hour traffic, especially if there is a signalized intersection of the Parkway with Bullard Avenue where vehicles queues would be created. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area, creating the potential for increases in local pollutant concentrations. The impact for potentially sensitive receptors would be long-term but negligible.

4.2.5.2 Additional Phase(s)

The impacts would be the same as described under Section 4.2.4.2.

4.2.6 Alternative H, Direct and Indirect Impacts

Based on length (approximately 18 miles) and the AADT, the maximum estimated VMT for the two-, four- and six-lane Parkway scenarios is 438,720, 877,440, and 1,316,160 VMT, respectively.

4.2.6.1 Phase I

Based on the analysis in Section 4.2.3, emissions from the operation of the two-lane road under Alternative H would not be expected to cause or contribute to a new violation.

The Mobile Elementary School is the nearest receptor, at a distance of approximately 2,400 feet. The impacts to existing receptors are the same as described for Alternatives A and C, with the exception of some residential development along the Parkway to the east of South Bullard Avenue, along the southern boundary of West Patterson Road. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area, creating the potential for increases in local pollutant concentrations. The impact for potentially sensitive receptors would be long-term but negligible.

4.2.6.2 Additional Phase(s)

The impacts would be the same as described under Section 4.2.4.2.

4.2.7 Sub-Alternative F, Direct and Indirect Impacts

Sub-Alternative F is a rerouting of the southern portion of the Parkway but would not represent a substantial increase in the length of the Parkway, and would not substantively increase the VMT or the emissions for the Parkway.

4.2.7.1 Phase I

The impacts to existing receptors under Sub-Alternative F would be similar to those described for Alternatives A, C, and H, except near a group of single-family homes located northeast of the intersection of 98th Avenue and Powhatan Road (Map Volume, Figure 3-1). The ROW for Sub-Alternative F is within several feet of these receptors. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area, creating the potential for increases in local pollutant concentrations. The impact for potentially sensitive receptors would be long-term but negligible.

Based on the preceding analysis in Section 4.2.3, emissions from Sub-Alternative F would not be expected to cause or contribute to a new violation.

4.2.7.2 Additional Phase(s)

The impacts would be the same as described under Section 4.2.4.2

4.2.8 Sub-Alternative G, Direct and Indirect Impacts

Sub-Alternative G is a rerouting of the southern portion of the Parkway but would not represent a substantial increase in the length of the Parkway, and would not substantively increase the VMT or the emissions for the Parkway.

4.2.8.1 Phase I

The impacts to existing receptors under Sub-Alternative G would be similar to those described for Alternative A, with the nearest receptor the Mobile Elementary School located at a distance of approximately 6,000 feet. Future development would increase the proximity of the improved Parkway network to existing and planned receptors in the analysis area, creating the potential for increases in local pollutant concentrations. The impact for potentially sensitive receptors would be long-term but negligible.

Based on the preceding analysis in Section 4.2.3, emissions from Sub-Alternative G would not be expected to cause or contribute to a new violation. It is not likely that any new violations of air quality standards would occur in the vicinity of Sub-Alternative G.

4.2.8.2 Additional Phase(s)

The impacts would be the same as described under Section 4.2.4.2.

4.2.9 BLM Preferred Alternative, Direct and Indirect Impacts

4.2.9.1 Phase I

The impacts from the BLM Preferred Alternative would be substantially similar as described in Section 4.2.4.1, however the project area and associated air quality impacts would shift slightly southwest.

4.2.9.2 Additional Phase(s)

The impacts from the BLM Preferred Alternative would be substantially similar as described in Section 4.2.4.2, however the project area and associated air quality impacts would shift slightly southwest.

4.2.10 Residual Impacts

Because no additional impact assessment measures are suggested, the residual impacts to air quality would be the same as discussed under all action alternatives.

4.2.11 Short-term Uses versus Long-term Productivity

Under all action alternatives, certain parcels in the project area would be converted from their existing undeveloped condition to transportation uses. The productivity of the area in terms of air quality is one with minor contributions from intermittent mobile pollutant sources operating in the analysis area comprising residential and recreational vehicle use.

There would be a loss in the capability of the project area to provide air quality conditions relatively free of mobile pollutant sources, the new transportation network would provide paved roadways reducing particulate emissions and better dispersion of CO₂ due to reduced travel times for the traveling public.

4.2.12 Irreversible and Irretrievable Commitment of Resources

There would be an irretrievable loss of local ambient air quality if the Parkway were implemented, due to the presence of commuter and recreational traffic on a paved Parkway. There may be an irreversible commitment of local ambient air quality because the Parkway could enable residential development and expansion of the transportation system in the area.

4.3 CULTURAL AND HERITAGE RESOURCES

4.3.1 Analysis Area, Approach and Assumptions

The study area for cultural and heritage resources is defined as the 3-mile radius around all action alternatives (Map Volume, Figure 3-2).

The following analysis assumes that all ground-disturbing activities would be confined to the project footprint (250-foot-wide ROW) for each action alternative and that only two of the three historic properties (Lung Homestead, AZ T:15:94[ASM], and Butterfield Overland Stage Route) are eligible for the NRHP.

Given the non-renewable nature of heritage resources, removing or damaging any portion of them diminishes their cultural and scientific value permanently. For the purposes of this analysis, there is no difference between short-term disturbance (temporary impacts; i.e. during construction) or long-term disturbance (Parkway operation). All disturbances to archaeological sites are considered permanent. Disturbance of artifacts and features would affect a site's NRHP eligibility.

4.3.2 No Action Alternative

Under the No Action alternative, the ROW application for the Parkway under Alternative A, Alternative C, Alternative H, Sub-Alternative F, or Sub-Alternative G would not be approved. The Parkway would not be built, and there would be no new adverse direct or indirect effects to cultural resources. Vehicle traffic across the historic trails would continue on the existing unpaved roads.

4.3.3 Impacts Common to all Action Alternatives

All action alternatives and all phases of Parkway construction would adversely directly and indirectly impact the Butterfield Overland Stage Route and the Anza NHT corridor. Direct impacts include disruption of the connectivity of each resource and the disturbance of the physical remains of the Butterfield Overland Stage Route. These trails are located on privately owned land and are not subject to BLM's management prescriptions (BLM 2012). There are no physical features associated with the Anza NHT. Public access to either trail would be impacted by the presence of a Parkway. The Komatke Trail, a historic Native American traditional trail corridor, also crosses the Rainbow Valley from the Sierra Estrella Mountains westward into the Gila Bend Mountains. This trail also has no known physical features within the Rainbow Valley, but songs and stories place the corridor in a way that impacts from construction would be minor and localized.

4.3.4 Alternative A, Proposed Action, Direct and Indirect Impacts

This would directly and indirectly impact the two historic properties (Lung Homestead and the Butterfield Overland Stage Route), as well as the Anza NHT corridor/management area.

Measures for mitigating the adverse effects to the Lung Homestead and the Butterfield Overland Stage Route may include such options as data recovery, artifact analysis, archival research, interpretative signage, Parkway crossovers, and vehicle parking for trail access; measures for the adverse effects on the Anza NHT

corridor may include interpretative signage, Parkway crossovers, and vehicle parking for trail access (Appendix R).

4.3.4.1 Phase I

Impacts to Lung Homestead, the Butterfield Overland Stage Route, and the Anza NHT would be minor (Table 4-5). As stated in Section 4.3.3, direct impacts to the Butterfield Overland Stage Route and the Anza NHT corridor would be adverse, site specific, and long-term. Alternative A crosses the trail near the northern end of the alternative. The presence of the Parkway would preclude traveling uninterrupted along the trail.

Two historic properties, the Lung Homestead and the Butterfield Overland Stage Route, would be indirectly impacted by the Parkway. The Lung Homestead may see indirect impacts from increased visitation to the area. The Parkway would have an indirect visual and auditory impact on the Butterfield Overland Stage Route and the Anza NHT corridor/management area. The Parkway would be visible to visitors to either resource from the valley floor, impacting the trails' setting. Visitors would hear traffic on the Parkway, which would adversely impact their overall experience of the trails. Impacts to historic properties would be addressed by the executed PA.

**Table 4-5. Cultural Resources by Action Alternative
(approximate feet/acres) 44-foot ROW**

Alternative	Butterfield (feet)	Anza (acres)	Lung (acres)	AZ T: 11:94 (acres)	Total (acres only)
Proposed Alternative A	62	5	1	0	6
Alternative C	62	5	1	0	6
Alternative H	62	5	1	0	6
Sub-Alternative F	56	6	0	0	6
Sub-Alternative G	48	5	0	0	5
BLM Preferred Alternative	48	5	0	0	5

4.3.4.2 Additional Phase(s)

AZ T:15:94(ASM), the Lung Homestead, Butterfield Overland Stage Route, and the Anza NHT corridor/management area would be directly impacted (Table 4-6).

Ground disturbance to all the resources is adverse, site specific, and long-term. The additional lanes would disturb up to 100% of AZ T:15:94 (ASM), resulting in a major and long-term impact. Impact magnitude to the Lung Homestead would be moderate; minor impacts to the Butterfield Overland Stage Route and the Anza NHT corridor/management area are expected.

Indirect impacts to the resources will be similar to those described in Section 4.3.4.1.

**Table 4-6. Cultural Resources by Action Alternative
(approximate feet/acres) 250 ft. ROW**

Alternative	Butterfield (feet)	Anza (acres)	Lung (acres)	Total (acres)
Proposed Alternative A	352	28	4	32
Alternative C	352	28	4	32
Alternative H	352	28	4	32
Sub-Alternative F	343	32	0	32
Sub-Alternative G	238	27	0	27
BLM Preferred Alternative	238	27	0	27

4.3.5 Alternative C, Direct and Indirect Impacts

Direct and indirect impacts to the Lung Homestead, the Butterfield Overland Stage Route and the Anza NHT corridor/management area would be the same as those described under Alternative A because Alternative C shares the same corridor through those resources. There would be no impacts to AZ T:15:94(ASM).

4.3.5.1 Phase I

Direct and indirect impacts for a two-lane Parkway to the Lung Homestead, the Butterfield Overland Stage Route, and the Anza NHT corridor/management area would be the same as those described under Alternative A.

4.3.5.2 Additional Phase(s)

Direct and indirect impacts additional lane construction to the Lung Homestead, the Butterfield Overland Stage Route and the Anza NHT corridor/management area would be the same as those described under Alternative A.

4.3.6 Alternative H, Direct and Indirect Impacts

Direct and indirect impacts to the Lung Homestead, the Butterfield Overland Stage Route, and the Anza NHT corridor/management area would be the same as those described under Alternative A because Alternative H shares the same corridor through those resources. There would be no impacts to AZ T:15:94(ASM).

4.3.6.1 Phase I

Direct and indirect impacts for the two-lane Parkway to the Lung Homestead, the Butterfield Overland Stage Route and the Anza NHT corridor/management area would be the same as those described under Alternative A.

4.3.6.2 Additional Phase(s)

Direct and indirect impacts for the additional lane construction to the Lung Homestead, the Butterfield Overland Stage Route and the Anza NHT corridor/management area would be the same as those described under Alternative A.

4.3.7 Sub-Alternative F, Direct and Indirect Impacts

Sub-Alternative F was designed to avoid impacts to the Lung Homestead and consists of an approximate 3-mile diversion around the site; causing no impacts to the Lung Homestead. The Butterfield Overland Stage Route and the Anza NHT corridor/management area would be impacted by Sub-Alternative F.

4.3.7.1 Phase I

The two-lane construction would impact the Butterfield Overland Stage Route and the Anza NHT corridor/management area. Similar to Alternatives A, C, and H, direct impacts to these two resources would be adverse, site specific, minor, and long-term. Indirect impacts would also be similar to Alternatives A, C, and H. The Lung Homestead and AZ T:15:94(ASM) would not be impacted.

4.3.7.2 Additional Phase(s)

Under Sub-Alternative F, the additional lane construction would impact the Butterfield Overland Stage Route and the Anza NHT corridor/management area. Overall, impacts to these resources would be similar to Alternatives A, C, and H. The Lung Homestead and AZ T:15:94(ASM) would not be impacted.

4.3.8 Sub-Alternative G, Direct and Indirect Impacts

Sub-Alternative G was designed to avoid impacts to the Lung Homestead, consisting of approximately 2 miles diversion around the site; causing no impacts to the Lung Homestead and AZ T:15:94(ASM); however, both the Butterfield Overland Stage Route and the Anza NHT corridor and Management Area would be impacted.

4.3.8.1 Phase I

The two-lane construction of Sub-Alternative G would impact the Butterfield Overland Stage Route and the Anza NHT corridor/management area. Similar to Alternatives A, C, and H, direct impacts to these two resources would be adverse, site specific, minor, and long-term but to a slightly lesser degree. Indirect impacts would also be similar to Alternatives A, C, and H. The Lung Homestead and AZ T:15:94(ASM) would not be impacted.

4.3.8.2 Additional Phase(s)

Under Sub-Alternative G, additional lane construction would impact the Butterfield Overland Stage Route and the Anza NHT corridor/management area. Overall, impacts to these resources would be similar to

Alternatives A, C, and H but to a slightly lesser degree. The Lung Homestead and AZ T:15:94(ASM)\would not be impacted.

4.3.9 BLM Preferred Alternative, Direct and Indirect Impacts

This alternative would directly and indirectly impact the Butterfield Overland Stage Route, Komatke Trail, and Anza NHT corridor/management area.

This alternative uses Sub-Alternative G to avoid impacts to the Lung Homestead, consisting of approximately 2 miles diversion around the site.

4.3.9.1 Phase I

Direct and indirect impacts are stated in Section 4.3.3. The Butterfield Overland Stage Route would be indirectly impacted by the Parkway. The Parkway would have an indirect visual and auditory impact on the Butterfield Overland Stage Route and the Anza NHT corridor/management area. The Parkway would be visible to visitors to either resource from the valley floor, impacting the trails' setting. Visitors would hear traffic on the Parkway, which would adversely impact their overall experience of the trails. Impacts to historic properties would be addressed by the executed PA (Appendix C).

4.3.9.2 Additional Phase(s)

The impacts from the BLM Preferred Alternative would be substantially similar as described in Section 4.3.4.2, however the project area and impacts would shift southwest and the Lung Homestead site would not be impacted.

4.3.10 Residual Impacts

Impacts to cultural resources in the analysis area would consist of all visual and auditory indirect impacts; these impacts to the setting of the resources would remain once the Parkway is constructed.

4.3.11 Short-term Uses versus Long-term Productivity

All direct and indirect impacts to cultural resources are permanent, all direct and indirect impacts are considered long-term.

4.3.12 Irreversible and Irretrievable Commitment of Resources

Ground disturbances to cultural resources are irreversible commitments of resources because it represents the removal of resources from the landscape. There would be both irreversible and irretrievable commitment of resources to the cultural resources identified within the project area.

4.4 SOIL RESOURCES

4.4.1 Analysis Area, Approach and Assumptions

The analysis area is the 250-foot ROW for soils (Map Volume, Figure 3-3) and Rainbow Valley for geologic units (Map Volume, Figure 3-4).

It is assumed that there would be no other use of the project area, except for transportation. Other utilities (i.e., transmission lines, gas pipelines, future roadways) would be located within the EPNG multi-use utility

corridor but outside the proposed ROW. Impacts to topography, geology, and soils in the area of analysis are discussed in terms of changes from the existing use.

4.4.2 No Action Alternative

The land on which the project is proposed would continue to be managed under the existing conditions, and would not result in significant impacts to topography, geology, or soils within the analysis area. The status of existing topographic, geologic, and soil resources described in Section 3.4 would remain unchanged.

4.4.3 Impacts Common to all Action Alternatives

4.4.3.1 Topography

Direct or indirect impacts to the general topography of the analysis area, such as elevation and overall slope, would not occur under any variant of the project alternatives. The project area does not cross hills that would need to be cut or graded down, or valleys that would need to be filled. Micro-topography would necessarily be altered within the area, to build the road bed, provide fill for culvert and wildlife crossings, and maintain consistent grades. These changes are not considered major and would not have direct or indirect impacts to the larger analysis area. Unnamed dry washes cross the project area, flowing northeast towards Waterman Wash, which flows into the Gila River at the north end of Rainbow Valley (approximately 10 miles north of the analysis area). Potential impacts to these washes are described below.

4.4.3.2 Geology

Construction of the project would not directly or indirectly affect local geology or geologic events under any alternative. The geologic setting of the analysis area is described in Section 3.4.3. No quaternary faults or folds are mapped in the vicinity of the project, and the project is mapped in an area of very low seismic hazard (USGS 2008; Appendix F).

Impacts to topography and geology are not anticipated under any proposed variation of the Parkway; only impacts to soils will be discussed further.

4.4.3.3 Soils

Long-term disturbance of soils would occur, resulting in a conversion from natural soils (as well as dirt roads and a small amount of farmland) to a Parkway. Each alternative also includes a 1.4-acre short-term construction easements/ROWs and the 20-foot temporary access road. Direct impacts would result from clearing of vegetation, grading, and compaction. Some of the soil is likely to contain native biological soil crusts. Indirect impacts to soils within the project area are not anticipated. Due to erosive characteristics any construction activity would be minimized by voluntary City-committed design features, as well as BMPs, SOPS and EPMs in Appendices P and R.

The temporary areas disturbed during construction would be reclaimed, resulting in long-term impacts to the footprints of only paved roadway and graded shoulders. Long-term impacts to soils would include the loss of soil productivity within these areas due to paving over the soil.

4.4.4 Alternative A, Proposed Action, Direct and Indirect Impacts

Short-term disturbance would occur along an approximately 16-mile corridor, which would result in a conversion from natural soils (as well as dirt roads and a small amount of farmland) to a graded and

disturbed construction corridor. Direct impacts would result from clearing of vegetation, grading, and compaction. Indirect impacts to soils within the project area are not anticipated.

Much of the area disturbed during construction would be reclaimed, resulting in long-term impacts to a corridor comprised of paved Parkway and graded median and shoulders within the 250-foot-wide ROW. Impacts would result from the clearing of vegetation, grading, compaction, and from construction of the Parkway. Long-term impacts to soils would include the loss of soil productivity within the transportation corridor due to the loss of access to the soils. The acres of short-term and long-term impacts to soils under Alternative A are in Table 4-7 below.

Table 4-7. Acres of Short-Term and Long-Term Impacts under Alternative A (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	37	37
Long-term Impacts	82	476
Total Disturbed Area	119	513

4.4.5 Alternative C, Direct and Indirect Impacts

The short-term and long-term, direct and indirect impacts to soils under Alternative C would be the same as described under Alternative A. However, at 18 miles in length, the corridor of Alternative C is longer than that of Alternative A and the area of soil disturbed would be larger. The short-term and long-term impacts to soils under Alternative C are described in Table 4-8.

Table 4-8. Short-Term and Long-Term Impacts to Soils under Alternative C (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	44	44
Long-term Impacts	96	548
Total Disturbed Area	140	592

4.4.6 Alternative H, Direct and Indirect Impacts

The short-term and long-term, direct and indirect impacts to soils under Alternative H would be the same as described under Alternative A. At 18 miles in length, the corridor of Alternative H is approximately the same length as that of Alternative C, but is longer than that of Alternative A. The area of soil disturbed would be larger. The short-term and long-term impacts to soils under Alternative H are described in Table 4-9.

Table 4-9. Short-Term and Long-Term Impacts to Soils under Alternative H (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	45	45
Long-term Impacts	97	556
Total Disturbed Area	142	601

4.4.7 Sub-Alternative F, Direct and Indirect Impacts

The short-term and long-term, direct and indirect impacts to soils under Sub-Alternative F would be the same as the segment it would replace. However, at 3 miles in length (versus 2.4 miles for the segment it would replace), the corridor of Sub-Alternative F is longer and the area of soil disturbed would be larger. The impacts under this sub-alternative would occur wholly on private lands. The short-term and long-term impacts to soils under Sub-Alternative F are described in Table 4-10.

Table 4-10. Short-Term and Long-Term Impacts to Soils under Sub-Alternative F (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	7	7
Long-term Impacts	15	84
Total Disturbed Area	22	91

4.4.8 Sub-Alternative G, Direct and Indirect Impacts

The short-term and long-term, direct and indirect impacts to soils under Sub-Alternative G would be the same as the segment it would replace. At 2 miles in length (versus 2.4 miles for the segment it would replace), the corridor of Sub-Alternative G is approximately the same and the area of soil disturbed thus the same. The impacts under this sub-alternative would occur wholly on private lands. The short-term and long-term impacts to soils under Sub-Alternative G are described in Table 4-11 below.

Table 4-11. Short-Term and Long-Term Impacts to Soils under Sub-Alternative G (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	6	6
Long-term Impacts	13	72
Total Disturbed Area	19	78

4.4.9 BLM Preferred Alternative, Direct and Indirect Impacts

The impacts from the BLM Preferred Alternative would be substantially similar as described in Section 4.4.4 and 4.4.8. The short-term and long-term impacts to soils are described in Table 4-12 below.

Table 4-12. Acres of Short-Term and Long-Term Impacts to Soils under BLM Preferred Alternative (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Short-term Impacts	37	37
Long-term Impacts	82	472
Total Disturbed Area	119	509

4.4.10 Residual Impacts

No residual impacts to topographic or geologic resources are anticipated under any of the action alternatives. Residual impacts to soils outside of the Parkway and graded shoulders are not anticipated.

4.4.11 Short-term Uses versus Long-term Productivity

Under all alternatives, there would be no short-term or long-term impacts to productivity of topographic or geological resources, except that geological resources would be precluded from access in the 250-foot-wide ROW during construction and operation.

Short-term productivity of soils would be affected in the 250-foot-wide ROW during construction, as the soils would be temporarily disturbed, graded, and compacted. However, a reclamation and revegetation plan would be implemented for the disturbed areas, resulting in long-term impacts to soil productivity to only the operational ROW, due to pavement and shoulders precluding access to soils for grazing, wildlife habitat, and agriculture.

4.4.12 Irreversible and Irretrievable Commitment of Resources

There would be no irreversible and irretrievable commitment of topographic and geological resources under any of the action alternatives.

There would be irreversible commitments to soils, because these areas are not expected to ever be reclaimed and revegetated; and long-term productivity of soils will be negatively impacted. Soil within the footprint of the paved Parkway and graded shoulder, would be irreversibly committed following construction of the Parkway (Table 4-13).

Table 4-13. Irreversibly and Irretrievably Committed Soil Resources, by Alternative (approximate acres)

	Two-lane Parkway (acres)	250 ft. ROW (acres)
Alternative A	82	476
Alternative C	96	548
Alternative H	97	556
Sub-Alternative F	15	84
Sub-Alternative G	13	72
BLM Preferred	82	472

4.5 VEGETATION RESOURCES

4.5.1 Analysis Area, Approach and Assumptions

This section describes the impacts for all alternatives on vegetation communities and invasive and noxious weeds.

Impact determinations were based on calculations of disturbance acreage or miles to vegetation types, including Sonora-Mojave Creosotebush- White Bursage and xeroriparian vegetation communities. These calculations included a GIS exercise to calculate acres of Sonora-Mojave Creosotebush- White Bursage and miles of xeroriparian vegetation. Impact indicators were assigned based mainly on the assumption that vegetation removal would be considered a long-term impact since desert vegetation does not recover rapidly, and that the impact would be negligible or minor since Sonora-Mojave Creosotebush- White Bursage and xeroriparian vegetation types are common throughout central Arizona. Alternative comparisons were based on the relative acreage or miles of impacts to each vegetation resource. Cumulative impacts to vegetation resources were analyzed in the Rainbow Valley area of analysis, as discussed in Section 4.17. The assumptions used in the analysis of impacts to vegetation resources include 1) that the voluntary City-committed design features as described in Appendix R will be followed; 2) that the vegetation in the proposed disturbance area will be removed during the Phase I construction; 3) that the design and construction activities would adhere to the specifications as outlined in Chapter 2; and 4) that surface water flow throughout the project area will only be minimally affected (Section 3.8, Water Resources). The approach for the analysis of impacts to vegetation resources in this section encompasses all of these considerations.

4.5.2 No Action Alternative

The Parkway would not be developed, management of vegetation, and current land uses in the area would continue at the discretion of BLM under the LSFO RMP.

Current land uses in the area of analysis include: dispersed outdoor recreation, agriculture, grazing, utilities, and transportation. Livestock grazing in the project area would continue in two allotments. Vehicle use of the existing dirt roads in and near the project area and the associated impacts to individual plants from fugitive dust would continue to occur as a result of vehicle use. Limited recreational foot traffic would presumably also continue at low levels. No acres or miles of vegetation communities would be disturbed

beyond any currently existing surface-disturbing activities. There would be no impacts to special-status plant species beyond any impacts associated with the existing conditions identified in Chapter 3. There would be no impacts to noxious and invasive plant species beyond any impacts associated with the existing conditions identified in Chapter 3, and there would be no project perimeter and/or construction disturbances to increase the likelihood of invasion by noxious and invasive plant species.

4.5.3 Impacts Common to All Action Alternatives

The analysis of effects on vegetation resources is divided into three categories for further clarification: 1) vegetation community types, 2) special-status plant species, and 3) noxious and invasive species.

4.5.3.1 Phase I

4.5.3.1.1 VEGETATION COMMUNITIES

Construction and operation of a two-lane Parkway would result in a site-specific, negligible, long-term direct impact to vegetation communities due to short-term and long-term vegetation removal, including of Sonora-Mojave Creosotebush- White Bursage and xeroriparian vegetation community types. A reclamation and revegetation plan would be implemented for areas outside of the permanent road development.

4.5.3.1.2 NOXIOUS AND INVASIVE PLANT SPECIES

The implementation of any of the alternatives during construction and operation of a two-lane Parkway could result in site-specific, minor, long-term, direct and indirect impact to vegetation communities along the perimeter of the project area due to the increased chance of noxious and invasive plant species introduction and establishment. This impact could modify the existing vegetation communities by altering the vegetative composition and also by the potential increased risk of wildfire due to non-native species accumulation of fuel load. The rate of seed production and seed dispersal (i.e., the likelihood of introduction) differs for each particular noxious and invasive species, it is difficult to define the exact area that would be affected; thus, this impact is not quantified for each individual alternative. Measures to manage and minimize the impacts of invasive species and noxious weeds are addressed in Appendix K.

4.5.3.2 Additional Phase(s)

4.5.3.2.1 VEGETATION COMMUNITIES

The construction and operation of additional lanes would result in a site-specific, negligible, long-term direct impact to vegetation communities due to short-term and long-term vegetation removal, including of Sonora-Mojave Creosotebush- White Bursage and xeroriparian vegetation community types.

4.5.3.2.2 NOXIOUS AND INVASIVE PLANT SPECIES

The construction and operation of additional lanes could result in a site-specific, minor, long-term, direct and indirect impact to vegetation communities along the perimeter of the project area due to the increased chance of noxious and invasive plant species introduction and establishment.

4.5.4 Alternatives A, C, and H Direct and Indirect Impacts Comparison

Direct and indirect impacts to vegetation communities and noxious and invasive plant species within the project area would be the same as described in Section 4.5.3 for all construction designs for Alternatives

A, C, and H. These impacts to vegetation resources would be greater than under the No Action Alternative. The acreage/mile comparison concerning these impacts can be found in Table 4-14.

Table 4-14. Direct and Indirect Impacts of Vegetation Resources for Alternatives A, C, and H (approximate acres(ac)/miles(mi))

	Proposed Alternative A	Alternative C	Alternative H
	2 Lane	2 Lane	2 Lane
Vegetation Communities	82 ac	96 ac	97 ac
Sonora-Mojave Creosotebush- White Bursage	74 ac	89 ac	87 ac
Xeroriparian	0.19 mi	0.15 mi	0.18 mi
	250 ROW	250 ROW	250 ROW
Vegetation Communities	400 ac	548 ac	556 ac
Sonora-Mojave Creosotebush- White Bursage	351 ac	498 ac	486 ac
Xeroriparian	0.97 mi	0.88 mi	1.14 mi

4.5.5 Sub-Alternative F, Direct and Indirect Impacts Comparison

Direct and indirect impacts to vegetation communities and noxious and invasive plant species along the perimeter of the project would be the same as described in Section 4.5.3 for all construction designs for Sub-Alternative F, and in relation to Alternatives A, C, and H. These impacts to vegetation resources would be greater than under the No Action Alternative. The acreage/mile comparison concerning these impacts can be found in Table 4-15.

Table 4-15. Direct and Indirect Impacts of Vegetation Resources for Sub-Alternative F (approximate acres (ac)/miles(mi))

	Sub-Alternative F	
	2 Lane	250 ROW
Vegetation Communities	15 ac	84 ac
Sonora-Mojave Creosotebush- White Bursage	15 ac	84 ac
Xeroriparian	0.03 mi	0.15 mi

4.5.6 Sub-Alternative G, Direct and Indirect Impacts Comparison

Direct and indirect impacts to vegetation communities and noxious and invasive plant species along the perimeter of the project would be the same as described in Section 4.5.3 for all construction designs for Sub-Alternative G, and in relation to Alternatives A, C, and H. These impacts to vegetation resources would be greater than under the No Action Alternative. The acreage comparison concerning these impacts can be found in Table 4-16.

Table 4-16. Direct and Indirect Impacts of vegetation resources for Sub-Alternative G (approximate acres(ac)/miles(mi))

	Sub-Alternative G	
	2 Lane	250 ROW
Vegetation Communities	13 ac	72 ac
Sonora-Mojave Creosotebush- White Bursage	13 ac	72 ac
Xeroriparian	.02 mi	0.12 mi

4.5.7 BLM Preferred Alternative, Direct and Indirect Impacts

Direct and indirect impacts to vegetation communities and noxious and invasive plant species along the perimeter of the project would be the same as described in Section 4.5.3 for all construction designs for BLM Preferred Alternative, and in relation to Alternatives A, C, and H. These impacts to vegetation resources would be greater than under the No Action Alternative. The acreage comparison concerning these impacts can be found in Table 4-17.

Table 4-17. Direct and Indirect Impacts of Vegetation Resources for BLM Preferred Alternative (approximate acres (ac)/miles(mi))

	BLM Preferred	
	2 Lane	250 ROW
Vegetation Communities	69 ac	400 ac
Sonora-Mojave Creosotebush- White Bursage	61 ac	351 ac
Xeroriparian	0.16 mi	0.91 mi

4.5.8 Residual Impacts

Residual impacts to vegetation resources are anticipated because impacts from the long-term disturbance and removal of vegetation communities, as discussed in the previous sections, would remain and cannot be mitigated any further. Although active measures to control invasive species are included, any ground disturbance and associated vehicle traffic would likely result in invasive species introduction.

4.5.9 Short-term Uses versus Long-term Productivity

Since the paved road bed surface will remain for an indeterminate amount of time in the future and these areas are not expected to ever be reclaimed and revegetated, long-term productivity of vegetation resources will be negatively impacted. Those areas that are reclaimed will have a lag in return to full productivity given that desert ecosystems can take up to 50 years to return to pre-disturbance conditions (Guo 2004; Kade and Warren 2002). Native plants that are salvaged and replanted often do not survive or go into “shock” and take many years to establish in the new area and return to full productivity and pre-disturbance conditions (Bainbridge 2007).

4.5.10 Irreversible and Irretrievable Commitment of Resources

Irreversible commitment of resources would be limited to the paved road bed surface, since it will remain for an indeterminate amount of time in the future and these areas are not expected to ever be reclaimed and revegetated. Implementation of any of the action alternatives would result in the irreversible and irretrievable loss approximately between 69 and 556 acres of upland vegetation communities and between approximately 0.15 and 1.14 miles of xeroriparian habitat.

4.6 VISUAL RESOURCES

The BLM manages landscapes that require varying levels of protection and modification, and gives consideration to the uses and values of other resources and the scenic quality of the landscape. This visual resource analysis identifies the potential project impacts to the physical environment through an evaluation of visual contrast and viewer sensitivity.

Impacts for visual resources are described in terms of negligible (no known impacts to resources); minor (direct effects are apparent and measurable but small and localized or contained within the footprint of the action); moderate (direct effects would be readily apparent and measurable over a larger area but still mainly within the footprint of the action); and major (direct effects would be highly noticeable and extend well beyond the footprint of the action).

4.6.1 Analysis Area, Approach and Assumptions

The analysis area for the visual resources analysis is a 10-mile buffer around all the action alternatives. The project area refers to the actual physical boundaries of the Parkway.

The visual resource impacts analysis is an assessment of landscape changes that would result from the construction and operation of the Parkway under the action alternatives. Changes to the characteristic landscape in the analysis area would be the primary direct impact of the Parkway on visual resources. The relative impacts of each alternative to the characteristic landscape were assessed by comparing visual contrasts that would result from changes to the form, line, texture, and color of the existing environment. The area of analysis for visual resources is the extent from where the project would be visible—i.e., the viewshed (which is located roughly within a 10-mile radius of the action alternatives and slightly further when viewed from higher elevations). The Rainbow Valley roughly represents the region in which existing visual resources, when assessed in combination with the project and other cumulative actions, would be impacted if the Parkway were implemented.

The analysis also consists of an assessment of visual contrast resulting from those same actions as seen from five critical viewpoints, or KOPs. These KOPs were selected to represent the views of disturbances of the Parkway that would be encountered by the greatest number of people, for the greatest viewing duration. The analysis also consists of an assessment of whether the changes to the landscape would meet the BLM's objectives for management of visual resources, as prescribed in the LSFO RMP (BLM 2012a). Table 4-18 shows the total VRM classification acreage of each action alternative, as well as acreage for ASLD land and private land. All BLM-administered lands crossed by the action alternatives are located on VRM Class IV landscape. Privately owned land and ASLD land remains unclassified in terms of BLM VRM.

Table 4-18. VRM Classifications by Action Alternative (approximate acres)

Alternative	VRM Class I	VRM Class II	VRM Class III	VRM Class IV
Alternative A	0	0	0	283
Alternative C	0	0	0	314
Alternative H	0	0	0	242
Sub-Alternative F	0	0	0	0
Sub-Alternative G	0	0	0	0
BLM Preferred Alternative	0	0	0	283

The SDNM (located approximately 600 feet west/south of the Proposed Alternative [Alternative A]) is classified as Class III, II, and I. Areas of the SDNM immediately adjacent to the Proposed Alternative are classified as Class III.

4.6.2 No Action Alternative

Implementation of the No Action Alternative would result in no construction and operation associated with the Parkway; and there would be no physical changes to the existing landscape. No change to the view experienced at each of the viewpoints, shown in Figure 3-7 (Map Volume), is expected under the No Action Alternative.

4.6.3 Impacts Common to all Action Alternatives

4.6.3.1 Phase I

Adding a parkway to the landscape in Rainbow Valley would result in an alteration of the existing landscape. Earthmoving activities from construction would cause dust to be emitted within the construction zone. Fugitive dust, if emitted in sufficient quantities, and if adverse weather conditions persist, could impact or degrade existing views. However, fugitive dust would not result in long-term changes to the existing landscape.

The Parkway would be visible from selected KOPs in the Rainbow Valley (Map Volume, Figure 3-7). Contrasts to the existing views in Rainbow Valley of the surrounding landscape would be addressed through voluntary City-committed design features (Appendix R). The effectiveness of using standard desert colors for painted concrete would be limited by the distance of the KOP and the presence of other sources of contrast; therefore, impacts would generally be the same as the direct and indirect impacts. The Parkway design would be the same for each action alternative (aside from the actual road alignment, location of wildlife crossings, and drainage crossings which are dependent upon geographic location of the Parkway). Signage, curb and gutter, slope and gradient would be the same for each alternative, and BMPs employed would also be the same (Appendix R). The surface of the Parkway would have an even, fine and smooth texture when viewed both near and from afar. The Parkway scale and purpose during operation would be the same for each alternative. Visual contrast ratings were completed for each of the five KOPs and are provided in Appendix I (SWCA 2009b).

4.6.3.1.1 SDNM/NORTH MARICOPA MOUNTAINS WILDERNESS: KOP 1

The Parkway would be scarcely visible in the foreground/middle ground from this KOP. The view towards the project area is a level view, and is approximately 5 miles west of the Parkway. BLM Road 8000C penetrates SDNM near the northern end of the project area, and topographic screening obscures the Parkway from coming into full view at this KOP (Photo 4-1). Travelers on this road would likely have high expectations for scenic quality (natural or undeveloped landscapes). The introduction of the Parkway into the landscape would result in contrasts to line due to the sharp edges, and the interruption of the expansive, panoramic landscape which currently has no views of similar facilities. A band of contrasting color changing the earth tones of browns, tans, and greens, to colors associated with built Parkway such as black/gray asphalt would occur. Contrast resulting from the texture change of the Parkway in the landscape would result in the evidence of a straight, linear paved feature. The Parkway would present weak visible contrasts to the existing landscape when observed from this KOP because of topographic and vegetative obstruction combined with the low-lying linear nature of the Parkway itself. A weak visual impact would be consistent with BLM VRM Class IV designation.



Photo 4-1. View from KOP 1, facing east from within SDNM toward the proposed Parkway.

4.6.3.1.2 HOUSE/RESIDENCE: KOP 2

Under all action alternatives, the Parkway would be visible in the middle ground from this KOP. The view towards the project area from this KOP is a level view. Individuals at this KOP would have level views of the Parkway because of the flat, open expanse of land in this area (Photo 4-2). Views from this KOP would only reveal 4 miles of the entire stretch of Parkway, and the absence of an elevated view would partially to almost completely screen most of the alignment. Areas of the Parkway that may be slightly elevated (culverts and bridges) would be slightly more visible than the at-grade Parkway itself. The regular geometric form and line associated with roads would result in a weak contrast with the irregular and organic forms (as well as existing regular and synthetic conditions) of the existing landforms and vegetation. A weak visual impact would correspond to BLM VRM Class IV designation.



Photo 4-2. View from KOP 2, facing southwest toward the proposed Parkway.

4.6.3.1.3 SIERRA ESTRELLA WILDERNESS—QUARTZ PEAK: KOP 3

The Quartz Peak summit would be approximately 10 to 12 miles from the action alternative alignments and would have superior views of the Parkway in the background distance zone (Photo 4-3). The entire Parkway would be visible from this KOP. However, from this distance, the geometric patterns would mimic the existing modifications associated with agricultural fields and other existing non-paved roads. The construction footprint followed by paving of the Parkway creates the greatest contrast to the surrounding landscape and therefore would result in a weak visual impact based upon distance and degree of contrast. A weak visual impact would correspond to BLM VRM Class IV designation.



Photo 4-3. View from KOP 3, facing west toward the SDNM and proposed Parkway.

4.6.3.1.4 COMMUNITY OF MOBILE: KOP 4

The Parkway would be visible from a level viewing position in the foreground distance zone approximately 1 mile from the southern terminus of the Parkway (Photo 4-4). Viewers at this KOP would likely not have a high expectation for scenic quality since existing development exists at this KOP, as well as the landfill being within view of this KOP. The Parkway would present a minimal and weak degree of visual contrasts to the existing landscape when observed from KOP 4 apart from those discussed within this section. Visual impacts from KOP 4 in Mobile would be weak, which would correspond to BLM VRM Class IV designation.



Photo 4-4. View from KOP 4, facing north toward the proposed Parkway.

4.6.3.1.5 JUAN BAUTISTA DE ANZA NATIONAL HISTORIC TRAIL: KOP 5

KOP 5 was designated due to the relatively high number of tourists that travel the Anza NHT, which runs along this portion of SR 238. The Parkway would not be visible from a level viewing position in the foreground and middle ground distance zone from KOP 5, which is located approximately 4 miles from the southern terminus of the Parkway (Photo 4-5). The Parkway, located in the middle ground and background, would be nearly completely screened by topography, vegetation, and the landfill. Visual impacts would be weak, directly impacting visitors, although corresponding to BLM VRM Class IV designation.

Construction and operation of the two-lane Parkway would create visual contrasts to line, color, and texture in an area where no or limited similar development exists. The profile would create mostly horizontal/linear changes to the viewshed and the movement of vehicles during operation would be evident from foreground and middle ground distances, but would be difficult to discern from background distances (8 miles and beyond). Changes to the landscape would be long-term, moderate, and limited to within a 10-mile radius.



Photo 4-5. View from KOP 5, facing north toward the proposed Parkway.

4.6.3.2 Additional Phase(s)

Construction and operation of the four- and six- lane Parkway would be similar to the two-lane scenario except the additional vehicular traffic which could be seen from foreground and middle ground.

The profile of the Parkway would create mostly horizontal/linear changes to the viewshed and the four-lane scenario would include a 112-foot-wide median. The expanded area of visual contrast would be evident from middle ground and foreground distances but due to topography, vegetation, and other visual disturbances, long distance views (over 5 miles away) would be largely obstructed. Changes to the landscape for all action alternatives would be long-term, moderate, and limited to within a 10-mile radius.

The profile of the Parkway would create horizontal/linear changes to the viewshed, the six-lane scenario would include an 84-foot-wide median. The expanded area of visual contrast would be evident from middle ground and foreground but due to topography, vegetation, and other visual disturbances, long distance views (over 5 miles away) would be largely obstructed. Changes to the landscape for all action alternatives would be long-term, moderate and largely limited to within a 10-mile radius. Variation of acres of disturbance for visual impacts would increase incrementally for each of the two-, four-, and six-lane scenarios.

4.6.4 Alternative A, Proposed Action, Direct and Indirect Impacts

This follows the boundary of the SDNM along the unimproved (EPNG) Pipeline Road. The addition of this alternative to the landscape in Rainbow Valley would result in an alteration of the existing landscape, which would be visible from viewpoints within the SDNM to the west. The Parkway would be visible from all KOPs in the Rainbow Valley to varying degrees (Map Volume, Figure 3-7) and visual contrast to the existing view in Rainbow Valley of the surrounding landscape from the area residents, users of adjacent public land, and SR 238 would be created. Likewise, the level of change to the characteristic landscape would be in keeping with the established VRM Class IV objectives for the BLM-administered land within the project area (Section 3.6).

4.6.4.1 Visual Resource Management

VRM objectives for public lands on which Alternative A is located are Class IV. Under the BLM VRM program, the objective of Class IV is to provide for management activities that require major modifications to the existing character of the landscape. These activities may dominate the view and be the major focus of viewer attention (BLM 1986b). The level of change to the characteristic landscape that would result from implementation of Alternative A is consistent with the objectives of VRM Class IV.

4.6.4.2 Visual Conditions

The Parkway would be largely constructed within the existing EPNG multi-use utility corridor, adjacent to an unpaved pipeline access road, existing 500-kV transmission line, and (EPNG) Pipeline Road.

Construction would be a simple line with a “sharp” edge, and evident line, color, and texture contrast, when viewed from the surrounding mountaintops, but would have irregular texture and lines when viewed from nearby. The ROW would be 250 feet wide. The color would be the same at all times of the day; however, depending upon the viewing angle and time of day, the dull hues of Parkway and asphalt features may shift to a lighter hue when increased light shines down at various angles. During construction, the hue would primarily be a light brown and tan, characteristic of road construction, surface-soil grading, and leveling of the project area. Construction would also have a coarse and random distribution texture, depending on the pattern of construction activities. This would be similar for both near and distant visual conditions.

This alternative represents the alignment with the fewest turns and curves. When observed from a higher elevation, it will create a continuous contrasting linear form dividing the Rainbow Valley from SDNM. The contrast would be weak when compared to the bold and complex forms of mountainous and desert landscapes that surround the project area. Similarly, other existing roads near the project area, such as Riggs Road and SR 238, can be viewed in the same viewshed as the Parkway. Since construction requires greater ground disturbance and an increased footprint (wider ROW), impacts to visual resources would be greatest during construction.

Upon completion, traveling vehicles would create movement in the landscape. In addition, during operation, the browns and tans would be replaced by a darker, dull chroma characteristic of other roads in the region. The Parkway would result in a “similar look” to other paved, two-lane roads in the area, such as SR 238. It would be paved with asphalt over aggregate base, resulting in a dark-colored surface that would travel the Rainbow Valley from north to south for approximately 16 miles, at a width of 44 feet.

The dominant features of Rainbow Valley would not be replaced by the Parkway as the primary dominating feature. The existing roads are not paved and are therefore a less-dominating contrast to the existing conditions than the Parkway. However, the characteristics of the landscape would shift slightly due to the introduction of a pavement into a generally vacant landscape. The shift would be within the management objectives outlined in the LSFO RMP (BLM 2012a). Under Alternative A, the level of change to the characteristic landscape would range from weak to strong, based on the visual resource contrast analysis, and would meet BLM VRM Class IV objectives.

4.6.4.3 Key Observation Points

The closest viewpoint, and the viewpoint with the most unobstructed views, is from Mobile (KOP 4) which lies less than 0.3 mile from the southern terminus (approximate last 2 miles). Views from this KOP afford foreground/middle ground and background views of approximately 10 miles of Parkway. Human-made development obstructs portions of direct views; however, the landscape is largely flat, panoramic, and sparsely vegetated, which affords ideal long-distance viewing conditions. Located within the SDNM (KOP

1) has the least potential for views of the Parkway due to topographic and vegetative obstruction. Views of the road are within the middle ground to background distance zones, most of the Parkway would be obstructed from views from this KOP. KOP 2 (residence), KOP 3 (Sierra Estrella Wilderness), and KOP 5 (Anza NHT) would afford similar viewing conditions, which would be from middle ground and background distances. KOP 3 would afford a superior view (from an elevated location) which results in a panoramic view of the landscape, and though Alternative A would be in the background distance zone, nearly the entire road corridor would be in view from this angle of observation.

4.6.4.4 Phase I and Additional Phase(s)

Visual impacts associated with the construction and operation of the two-lane Parkway would include the physical changes resulting from the addition of a 44-foot wide Parkway constructed in a 250-foot-wide ROW. Final design of the Parkway is not complete at this time; therefore, the visual impacts are based upon the assumption that the Parkway will be built as a typical parkway type and views would be of a paved linear transportation feature with bidirectional movement of vehicular traffic. A digital model depicting the Parkway was rendered to illustrate the transportation facility as raised approximately 15 feet from ground level to simulate maximum elevated conditions. Changes to the landscape for the two-lane scenario would be long-term, moderate, and limited to within a 10-mile radius. Alternative A follows an existing unpaved roadway or “scar” in the landscape which largely minimizes surface disturbance as compared to the other action alternatives being considered. The proposed Parkway is not located on a steep, exposed slope, but rather is located along an existing disturbed corridor.

Visual impacts associated with the construction and operation of the four-lane Parkway would include the physical changes resulting from the addition of a 200-foot-wide Parkway constructed in a 250-foot-wide ROW. The four-lane scenario would have two lanes in each direction with graded shoulders and a 112-foot-wide median separating each set of lanes. Final design of the Parkway is not complete at this time; therefore, the visual impacts are based upon the assumption that the Parkway will be built as a typical parkway type and views would be of a paved linear transportation feature with four lanes of bidirectional movement of vehicular traffic. Additional traffic would create a more obvious pattern of motion along the Parkway because the four-lane Parkway accommodates more traffic than the two-lane scenario. Changes to the landscape for the four-lane scenario would be long-term, moderate, and limited to within a 10-mile radius. However, adding two additional through lanes to the ROW would result in a minor increase in visual impact.

Visual impacts associated with the construction and operation of the six-lane Parkway would include the physical changes resulting from the addition of a 200-foot-wide Parkway constructed in a 250-foot-wide ROW. The six-lane scenario would have three lanes in each direction with graded shoulders and an 84-foot-wide median separating each set of lanes. Final design of the Parkway is not complete at this time; therefore, the visual impacts are based upon the assumption that the Parkway will be built as a typical six-lane parkway type and views would be of a paved linear transportation feature with six lanes of bidirectional movement of vehicular traffic. Additional traffic would create a more obvious pattern of motion along the Parkway because the six-lane Parkway accommodates more traffic than the two-lane scenario. Changes to the landscape for the six-lane scenario would be long-term, moderate (because of the addition of a human-made feature where there currently is none), and largely local (limited to within a 10-mile radius, or viewshed). Variation of acres of disturbance for visual impacts would increase incrementally for each of the two-, four-, and six-lane scenarios. The addition of a six-lane Parkway, would increase the visual impact of the alternative within the landscape; at this time the full vegetation plan and all voluntary City-committed design features would be realized and would reduce the visual size and contrast of the Parkway within the viewshed.

4.6.5 Alternative C, Direct and Indirect Impacts

Alternative C follows a curvilinear route south on Rainbow Valley Road, east along Patterson Road and south to connect with (EPNG) Pipeline Road. The addition of this alternative to the landscape in Rainbow Valley would result in an alteration of the existing landscape, which would be visible from spots within the Rainbow Valley. Figure 3-7 (Map Volume) indicates Alternative C would be visible from selected KOPs in the Rainbow Valley. Visual contrasts to the existing view in Rainbow Valley of the surrounding landscape from the area residents, users of adjacent public land, and SR 238 would be created. Likewise, the level of change to the characteristic landscape would be in keeping with the established VRM Class IV objectives for BLM-administered land within the project area (Section 3.6).

4.6.5.1 Visual Resource Management

As compared to Alternative A, Alternative C is located between 3 and 6 miles from the KOP 1 (SDNM), which is the most highly sensitive viewing area. Alternative C may have slightly less of an adverse impact to the viewshed because of its distance from visually valued landscapes. However, the addition of Alternative C to the existing landscape would have long-term, moderate (due to the addition of a human-made feature where there currently is none), and largely local (limited to within a 10-mile radius, or viewshed) impacts.

4.6.5.2 Visual Conditions

The visual conditions of the Parkway under Alternative C would be similar to Alternative A. However, the complexity of Parkway construction for Alternative C would differ from Alternative A due to sharp curves and turns. When observed from higher elevations, it would create a continuous contrasting linear form dividing the Rainbow Valley from SDNM. Although linear, the addition of curves and turns adds complexity to the geometric form of the landscape. The curvilinear nature in the alignment is more abrupt and appears to be more discordant with the existing topography. Alternative C would have a higher level of visual contrasts to the landscape than Alternative A.

4.6.5.3 Key Observation Points

When observed from KOP 3, Sierra Estrella Mountains, the curves and turns would add complexity to the geometric form of the landscape. This would result in an increased contrast to the existing landscape. However, aside from the curvilinear nature of the corridor adding to additional contrast within the landscape, Alternative C would largely be viewed similarly to Alternative A at each of the KOPs.

4.6.5.4 Phase I and Additional Phase(s)

Changes to the landscape for the two-lane scenario would be long-term, moderate, and limited to within a 10-mile radius.

Visual impacts associated with the construction and operation of additional lane construction is the same described in Alternative A, with the exception of the alignment which follows a curvilinear pathway and would result in more evident views in the areas of the curves and turns.

4.6.6 Alternative H, Direct and Indirect Impacts

Physically similar to Alternative C in that it follows south on Rainbow Valley Road, east along Patterson Road and south on Bullard Avenue then diverges south and east through unimproved landscape to connect with (EPNG) Pipeline Road to its terminus at SR 238. The addition of this alternative to the landscape in

Rainbow Valley would result in an alteration of the existing landscape, which would be visible from spots within the Rainbow Valley. Figure 3-7 (Map Volume) indicates Alternative H would be visible from selected KOPs in the Rainbow Valley. Visual contrasts to the existing view in Rainbow Valley of the surrounding landscape from the area residents, users of adjacent public land, and SR 238 would be created. Likewise, the level of change to the characteristic landscape would be in keeping with the established VRM Class IV objectives for BLM-administered land within the project area (Section 3.6).

4.6.6.1 Visual Resource Management

Alternative H may have less of an adverse impact to the viewshed than Alternative A because of its distance from visually valued landscapes—located between 3 and 16 miles from KOP 1 (within the SDNM). The addition of the Parkway to the existing landscape would have long-term, moderate, and limited impacts within a 10-mile radius.

4.6.6.2 Visual Conditions

The visual conditions of the Parkway under Alternative H would be similar to Alternative C. The complexity of Parkway construction would differ due to a series of sharp turns within a relatively short distance of one another. When observed from higher elevations, would create a continuous contrasting linear form dividing the Rainbow Valley from SDNM. The addition of sharp turns adds more complexity to the geometric form of the landscape. The curvilinear nature is more abrupt and appears to be more discordant with the existing topography, having a slightly higher level of visual contrast to the landscape. The addition of the Parkway to the existing landscape would have long-term, minor, and limited impacts within a 10-mile radius.

4.6.6.3 Key Observation Points

The contrasts would be visible predominantly from KOP 2 (residence) and KOP 3 (Sierra Estrella Wilderness) and would be similar to those described under Alternative C. When observed from KOP 3, the Parkway curves and turns, which would add complexity to the geometric form of the landscape. This would result in an increased contrast to the existing landscape.

4.6.6.4 Phase I and Additional Phase(s)

Visual impacts from the two-lane Parkway would be the same as for Alternative C.

Visual impacts from additional lane construction would be the same as for Alternative C. Variation of acres of disturbance for visual impacts would increase incrementally for each of the two-, four-, and six-lane scenarios.

4.6.7 Sub-Alternative F, Direct and Indirect Impacts

The Parkway traverses approximately 3 miles, beginning at (EPNG) Pipeline Road and following a southeasterly route to connect with its terminus at SR 238. This alternative would result in an alteration of the existing landscape, which would be visible from viewpoints. Figure 3-7 (Map Volume) indicates the Parkway would be visible from three KOPs in the Rainbow Valley. Visual contrasts would be created from the existing view in Rainbow Valley to the surrounding landscape from users of adjacent public land, and SR 238.

4.6.7.1 Visual Resource Management

Sub-Alternative F is located entirely on private lands, which do not have visual management prescriptions.

4.6.7.2 Visual Conditions

The visual conditions of the Parkway under Sub-Alternative F are primarily along (EPNG) Pipeline Road, an existing unpaved, bladed maintenance road that ends at SR 238.

4.6.7.3 Key Observation Points

The contrasts of the Parkway are most visible from the two southernmost KOPs (KOP 4—Mobile, and KOP 5—Anza NHT). When observed from the southern end of the project area, the intersection with SR 238 would be evident.

4.6.7.4 Phase I and Additional Phase(s)

The construction and operation of the two-lane Parkway would include the visual changes resulting from the addition of a 44-foot-wide, approximately 3 miles in length, constructed within a 250-foot-wide ROW (EPNG) Pipeline Road. Final design is not complete at this time; therefore, the visual impacts are based upon the assumption that it will be built as a typical parkway.

Visual impacts from additional lane construction would be the same as for Alternative A.

4.6.8 Sub-Alternative G, Direct and Indirect Impacts

This alternative would result in an alteration of the existing landscape, which would be visible from viewpoints within Rainbow Valley. Figure 3-7 (Map Volume) indicates visibility from three KOPs in Rainbow Valley. Visual contrasts to the existing view in Rainbow Valley of the surrounding landscape from users of adjacent public land, and SR 238.

4.6.8.1 Visual Resource Management

Sub-Alternative G is located on private lands, which do not have visual management prescriptions.

4.6.8.2 Visual Conditions

The visual condition of the Parkway for Sub-Alternative G is primarily undeveloped, open desert scrub landscape that ends at SR 238.

4.6.8.3 Key Observation Points

The contrasts of the Parkway are most visible from the two southernmost KOPs (KOP 4—Mobile, and KOP 5—Anza NHT). When observed from the southern end of the project area, the intersection with SR 238 would be evident.

4.6.8.4 Phase I and Additional Phase(s)

The construction and operation of the two-lane Parkway would include visual changes resulting from the addition of a 44-foot-wide, approximately 2 miles in length, constructed within a 250-foot-wide ROW.

Final design of the Parkway is not complete at this time; therefore, the visual impacts are based upon the assumption that it will be built as typical parkway.

Visual impacts from additional lane construction would be the same as for Alternative A.

4.6.9 BLM Preferred Alternative, Direct and Indirect Impacts

Direct and indirect impacts to VRM, visual conditions and the KOPs for the BLM Preferred Alternative are the same as Alternative A.

4.6.9.1 Phase I and Additional Phase(s)

Visual impacts from Phase I construction would be the same as for Alternative A; however, final design of the southernmost 2 miles is not complete at this time; therefore, the visual impacts are based upon the assumption that it will be built as typical parkway.

Visual impacts from additional lane construction would be the same as for Alternative A.

4.6.10 Residual Impacts

All action alternatives fall within Class IV VRM; residual impacts from the operation of the proposed Parkway would include a new feature on the landscape and increased vehicular traffic. This would result in long-term, local, and minor impact given that the City has committed to voluntary design features (Appendix R).

4.6.11 Short-Term Uses versus Long-Term Productivity

Construction and operation of the Parkway would require short-term and long-term uses of land for transportation. Implementation of the Parkway under all action alternatives would create long-term and long-term disruptions of the characteristic landscape from soil and vegetation disturbances and would change the land use from a natural desert setting to a transportation corridor.

4.6.12 Irreversible and Irretrievable Commitment of Resources

The visual contrasts that would result from the operation of the Parkway would involve an irreversible and irretrievable loss of a portion of the characteristic landscape in Rainbow Valley.

4.7 WATER RESOURCES

4.7.1 Analysis Area, Approach and Assumptions

Direct and indirect impacts to water resources consider both surface water and groundwater. The area of analysis was described in Chapter 3.

Surface water resources that would be impacted by this project include disturbance to surface water drainages or FEMA floodplains and changes to water quantity or quality. Long-term disturbance to regional drainage patterns would be the primary impact of the Parkway to surface water resources; therefore, the number of wash crossings and acres of FEMA floodplains disturbed is used for evaluating the surface water conveyance; a GIS analytical tool with an overlay of each action alternative was used to aid in this analysis. Surface water quality is evaluated by the potential for change in water chemistry from erosion or release of

pollutants. With regard to groundwater resources, although the water source that would be used to meet the short-term water demands for construction of the Parkway is yet to be determined, it would likely be groundwater from the regional aquifer. The total Parkway water demand relative to the regional aquifer is used to evaluate the potential for change in groundwater resources.

It is assumed that the Parkway would be designed to meet current Parkway design standards, using the June 2011 Rainbow Valley area drainage master plan (ADMP) and that existing natural drainage patterns and surface water peak flows would be maintained with no on-site retention (V3 2007). With respect to groundwater, it is assumed that water demand for the Parkway would occur only during the construction phase and would be purchased from an existing source located in the local Rainbow Valley basin; no new water source would be developed. For additional lane construction, it is assumed that disturbance to the center median would be short-term, occurring only during construction.

4.7.2 No Action Alternative

There would be no development on BLM-administered land, and water resources would continue to be managed under existing conditions. Existing land uses would continue, and ephemeral washes within the Parkway footprint would not be impacted. Local use of groundwater resources would continue at the existing demand level, and no additional groundwater resources would be used for the construction.

4.7.3 Impacts Common to all Action Alternatives

As described below, impacts to surface water resources would be the same for all action alternatives; however, there would be a difference in the amount of impact relative to the total amount of disturbance to washes and FEMA floodplains per each action alternative.

All impacts to jurisdictional washes would be subject to CWA permit general conditions, as well as any special conditions developed by the USACE. Impacts must also meet state and Federal water quality standards, which are administered by ADEQ (under the Arizona Pollutant Discharge Elimination System [AZPDES] Construction General Permit AZG2013-001). A site-specific stormwater pollution prevention plan (SWPPP) would identify short-term BMPs to control erosion and sedimentation from the project area that would be put in place prior to the start of construction activities and would remain until final stabilization has occurred. Permanent erosion control features such as concrete aprons or rip-rap would be installed at all wash crossings. The application of drainage modeling and design features would minimize the impact of the Parkway on washes. Further, application of design features along that portion that follows the existing Rainbow Valley Road would likely be a positive impact to surface water resources by improving existing drainage in the area. Wash crossings would be engineered to preserve the washes' natural drainage patterns, long-term disturbance to floodplains as a result of the installation would have a negligible impact on the floodplain form. These crossings would be engineered to maintain the existing flow capacity of the washes, no changes to floodplain function due to project construction are expected to occur.

The voluntary City-committed design features for the Parkway include channel flows that would be maintained, floodplain function that would not be disrupted, short-term erosion control that would be in place during the construction phase of the project, and long-term erosion control measures incorporated into the project design.

With respect to nearby impaired waters, 12 miles north of the project area Waterman Wash drains 420 square miles of watershed into the Gila River. Beginning at its confluence with Waterman Wash, a 14-mile reach of the Gila River is designated as impaired for pesticides. Impacts from the project in the Waterman

Wash watershed are not expected to result in any further contributions of pesticide to the Gila River because the project would not involve the application of pesticides.

4.7.3.1 Demand Projections

Water demand for the project would occur during the Phase I construction, which is estimated to last for 32 months (approximately 4 years for all construction phases). Total water demand for the construction of the project is estimated to be approximately 250,000 gallons per mile. By converting gallons to acre feet, and assuming for 4 year construction, the demand projections, Table 4-19 provides a summary of the water that is estimated for the construction of each action alternative.

Table 4-19. Summary of Estimated Construction Water Use by Action Alternative

Action Alternative	Length (miles)	Estimated Total Water Use (acre-feet)	Estimated Water Use Per Year (acre-feet per year)
A	16	12	3
C	18	14	4
H	18	14	4
F	3	<1	<1
G	2	<1	<1
BLM Preferred	15	12	3

4.7.3.2 Surface Water

There are no perennial surface water features in the project area, only ephemeral washes that flow in response to rainfall. Existing conditions at peak ephemeral flow in washes resulting from a 100-year, 24-hour storm event within the project area is estimated to range from 80 to 1,043 cubic feet per second (V3 2007). Ephemeral washes in the project area include the West Prong, numerous tributaries to the West Prong, and Waterman Wash. Construction of each action alternative would result in direct impacts to the ephemeral washes at each location the Parkway crosses a wash. Long-term disturbance to floodplains and surface drainages at wash crossings would occur with the installation of engineered road crossing (Table 4-20). These disturbances would alter the floodplain and channel dynamics, and disturb riparian vegetation in the immediate vicinity of each wash crossing. Analyses of the floodplain and channel dynamics are discussed below for each action alternative. Disturbances at each Parkway wash crossing could also have the potential to indirectly impact sediment delivery downstream and is discussed below.

With respect to wash crossings along the Parkway, the City has voluntarily committed to design features that would maintain natural drainage patterns, and crossings have been designed to maintain the existing flow velocities (Appendix R). To accomplish this, the Parkway would incorporate three types of wash crossings to maintain the existing hydrologic regime: low-water crossings would be used in areas of sheet flow conditions, and culvert crossings or arch-span structures would be used at crossings where distinct channels exist in order to maintain channel flow conditions. Table 4-20 summarizes the wash crossings proposed for each action alternative. Likewise, the Parkway will introduce new impervious areas to the Waterman Wash watershed, which could also potentially increase the flow velocity of stormwater. However, given that the Parkway footprint is only <1% of Waterman Wash watershed, the impact of these additional impervious areas is considered to be negligible.

Prior to the start of construction activities on the Parkway, surface water resources would be protected with short-term BMPs that would be put in place to control erosion and sedimentation from the project area and to assure that surface water quality is maintained. Long-term erosion control features only mitigate the immediate local impacts; therefore, final design for each phase must also account for the potential of concentrated flows to create longer-term impacts with incising of channels downstream. BMPs would remain in place until final stabilization of all disturbed areas has occurred, at which time the short-term BMPs would be removed. Long-term erosion control features, for example concrete aprons or rip-rap, would be installed at all wash crossings and would remain in place for the life of the project to minimize erosion and downstream sedimentation. Once wash crossings are installed, surface water velocity and sediment load are not expected to be significantly different from pre-construction conditions, which would allow the form and function of the floodplain to stay mostly intact.

Table 4-20. Proposed Wash Crossing Types for each Action Alternative

Impact Feature	Approximate Dimensions	Number proposed for BLM Preferred	Number proposed for Alt A	Number proposed for Alt C	Number proposed for Alt H	Number proposed for Sub-Alt F	Number proposed for Sub-Alt G
Low-water crossing	200-1,600 linear feet	15	19	30	29	0	0
Culvert	2 to 6 foot openings	17	17	12	8	2	0
Arch span-type culvert (wildlife crossing)	Minimum of 12 feet high	3	3	2	3	0	0

The potential for indirect impacts to sediment delivery downstream to the West Prong and Waterman Wash would be minor because voluntary City-committed design features would minimize changes to surface water velocity and sediment load and permanent erosion control features would be installed at each wash crossing. Further, any indirect impacts in the vicinity of the wash crossing would dissipate as the distance from individual Parkway wash crossings increased and would unlikely impact perennial surface flow in the Gila River.

A complete jurisdictional delineation would need to be conducted prior to construction to support CWA Section 404 permitting, to minimize surface water impacts and to evaluate the extent to which washes within the project area exhibit characteristics the USACE may consider indicators of potentially jurisdictional WUS, thus requiring a permit under Section 404 of the CWA. Impacts to surface water quality are minor, long-term, direct impact to surface water from disturbance at wash crossings and in floodplains.

4.7.3.3 Groundwater

Water would be required for the Parkway during each construction phase. The supply of water to meet the annual construction demands is yet to be determined, but it would most likely be groundwater purchased from a local source.

Demands on groundwater in most of the west Salt River Valley has surpassed supply and has resulted in groundwater deficit, however the Rainbow Valley Sub-Basin has seen a decrease in demand and corresponding rise in aquifer water levels in recent years. Pumping of groundwater in the Rainbow Valley Sub-Basin, which began in the 1940s with development of agriculture in the area, has dropped from an

annual high of 72,000 acre-feet in 1972 to less than 7,000 acre-feet per year in 2002 (Rascona 2003). Recharge to the groundwater aquifer occurs both naturally along mountain fronts and in ephemeral streambeds, and from incidental recharge of agricultural irrigation. Recharge in Rainbow Valley is unknown (ADWR 2010), but is estimated to be approximately 9,300 acre-feet per year (White 1963).

The water demand for the Parkway is 0.04% or less of the estimated recharge for the sub-basin. Impacts to groundwater quantity are considered negligible because total water demands for Parkway are very minimal. Any impact to groundwater resources would most likely occur locally, only in the Rainbow Valley Sub-Basin, and have a negligible, short-term impact.

With respect to groundwater quality, because BMPs would be in place to protect against potential spills during the construction phase, the potential for the Parkway to impact groundwater quality during construction would be short-term and is negligible. During operation, stormwater runoff from the Parkway would contain petroleum products from vehicles and asphalt. But because there are no retention basins planned that would collect and hold stormwater runoff long enough to allow for percolation into the aquifer, and because the depth to groundwater in the vicinity is well over 250 feet below ground surface, the potential for the Parkway to impact groundwater quality is long-term but negligible.

4.7.3.4 Phase I

Impacts to surface water and groundwater resources common to all action alternatives for construction of the two-lane Parkway are as described above.

4.7.3.5 Additional Phase(s)

4.7.3.5.1 SURFACE WATER

When the construction of additional lanes occur, it is assumed that the same number of wash crossings would need to be constructed. Therefore, the same types of impacts to surface water resources would occur, but with increased amount of disturbance to washes and floodplains varying by each action alternative (Table 4-21). Impacts to surface water quality would be the same as described above.

Table 4-21. Summary of Action Alternatives and Sub-Alternatives Surface Water Impacts (approximate acres)

Action Alternative or Sub-Alternative	No. of Wash Crossings,	Wash Area	FEMA Floodplains Long-term Impacts	FEMA Floodplains	Acres of Floodplain Affected (Short-term + Long-term)
	Entire ROW			Short-term Impacts, 250 ft. ROW (designated and/ or pending, in acres)	
2 Lane					
BLM Preferred Alternative		1	8		24
Alternative A		1	10		28
Alternative C		1	10		41
Alternative H		1	15		50
Sub-Alternative F		0	6		21

Table 4-21. Summary of Action Alternatives and Sub-Alternatives Surface Water Impacts (approximate acres) (continued)

Action Alternative or Sub-Alternative	No. of Wash Crossings, Entire ROW	Wash Area	FEMA Floodplains Long-term Impacts	FEMA Floodplains Short-term Impacts, 250 ft. ROW (designated and/or pending, in acres)	Aeres of Floodplain Affected (Short-term + Long-term)
Sub-Alternative G		0	0		0
250 ft. ROW					
BLM Preferred Alternative	35	2	28	16	44
Alternative A	39	3	35	18	53
Alternative C	44	3	39	31	70
Alternative H	40	4	56	35	91
Sub-Alternative F	0	1	21	15	36
Sub-Alternative G	0	0	0	0	0

4.7.3.5.2 GROUNDWATER

It is assumed that the same amount of groundwater would need to be used for dust control for additional lane construction as would be used for construction of the Phase I, therefore doubling the total amount of groundwater that would be withdrawn from the local aquifer (6 to 7 acre-feet) varying by each action alternative, or 0.4 to 0.5 acre-feet for the sub-alternatives. But because the rate of groundwater withdrawal for the second phase would remain very minimal relative to the estimated annual recharge to the aquifer, impacts to groundwater quantity would be negligible, and because the withdrawal would occur only during construction, these impacts would be short-term. Impacts to groundwater quality would be the same as described above.

The rate of groundwater withdrawal for all phases would remain the same, but the total amount of groundwater that would be withdrawn from the local aquifer for all three phases would be 9.0 to 10.5 acre-feet, varying by each action alternative, or 0.5 to 0.7 acre-feet for the sub-alternatives. This total amount remains very minimal relative to the estimated annual recharge to the aquifer and impacts to groundwater quantity would be negligible and short-term.

4.7.11 Residual Impacts

Residual impacts are addressed in the common to all in section 4.7.3.2 Surface Water.

4.7.12 Short-term Uses versus Long-term Productivity

The long-term operation of the Parkway would have negligible impact on the long-term productivity of surface water resources. As described above, impacts are addressed in the common to all in section 4.7.3.2 Surface Water. With regard to groundwater, the Parkway does not involve development of groundwater resources and use of groundwater is very minimal. The short-term use of a small amount of groundwater

during the construction phase of the Parkway would not have an impact on the long-term productivity of groundwater resources.

4.7.13 Irreversible and Irretrievable Commitment of Resources

The footprint of the Parkway would physically impact washes and floodplains with the installation of permanent culverts, paved low-water crossings, and paved ROW within floodplains. However, this would have minimal effect on surface quantity and quality because the project would be designed to maintain natural drainage patterns, maintain existing flows, and preserve the form and function of the floodplain. Because existing flows and floodplain form would be maintained, there would be no irreversible or irretrievable commitment of surface water flow. The surface water quality would experience irreversible long-term effects downstream of wash crossings due to concentrated flow at the wash crossings. Also, the proposed Parkway would concentrate flow at crossings and introduce an impermeable surface, increasing surface flow velocity and the time water can naturally filter into the ground.

With respect to groundwater resources, the short-term impact of the use of groundwater during the construction phase of the project would be an irretrievable commitment of resources for the 3 to 4 years it is impacted. The commitment of groundwater resources is not irreversible though. Natural recharge would still occur in washes and along mountain fronts and any groundwater consumed by the Parkway during the construction phase would be recovered by recharge to the aquifer.

4.8 WILDLIFE

4.8.1 Analysis Area, Approach and Assumptions

This section describes the impacts of the Proposed Action and alternatives, as described in Chapter 3, on wildlife resources within the project area, including endangered, threatened, special-status, migratory bird species, and other sensitive terrestrial species.

The impact analysis area for wildlife resources is defined in Chapter 3. As a result of defining this analysis area for this wildlife resource impacts analysis, all effects and impacts as presented will include not only the project area but also the regional area in order to evaluate the connectivity of movement patterns for wildlife species in the region, e.g., potential fragmentation of habitat, and any potential movement disruptions that may occur as a result of this project, as well as potential mortality.

The assumptions used in the analysis of impacts to wildlife resources include:

- The voluntary City-committed design features described in Appendix R will be followed;
- The design, construction, and operation activities would adhere to the specifications as outlined in Chapter 2;
- The presence of wildlife species is closely tied to the presence and quality of a vegetation community or resource;
- Vegetation communities provide breeding, foraging, cover, and movement habitat for wildlife species, thus are synonymous with wildlife habitat, and therefore can be used to quantify loss or degradation of wildlife habitat;
- For amphibian species, the analysis determined that habitat removal and dispersal impacts were the only potential effects to consider. Furthermore, amphibian habitat was equated with the xeroriparian habitat associated with the two large washes in the project area, i.e., Waterman Wash and West Prong, where amphibian species would be most likely to occur;

- For bat species, the analysis determined that removal of foraging habitat would be the only potential effect to consider. Furthermore, bat foraging habitat was equated with both Creosote Bush-White Bursage and xeroriparian vegetation types where this species could forage;
- For bird species, the analysis determined that removal of nests would be the only potential effect to consider, since the MBTA only protects birds, nests, and eggs (i.e., nests only, and not other habitat such as foraging habitat). An exception is for the golden eagle, where foraging habitat removal would be the only potential effect to consider, since suitable nesting habitat is not present within the analysis area. Furthermore, habitat for most bird species was equated with xeroriparian habitat associated with Waterman Wash and West Prong, i.e., large washes with dense xeroriparian vegetation, since this is where suitable bird habitat is most likely to occur. Exceptions are for 1) Costa's hummingbird, LeConte's thrasher, white-winged dove, and mourning dove habitat, which includes both Creosote Bush-White Bursage and xeroriparian vegetation; 2) western burrowing owl habitat, which includes only Creosote Bush-White Bursage vegetation; and 3) Bell's vireo habitat, which includes xeroriparian vegetation associated with all washes, not just large washes;
- For reptile species, the analysis determined that habitat removal and dispersal impacts were the only potential effects to consider. Furthermore, both Creosote Bush-White Bursage and xeroriparian habitat were equated with habitat for these species; and
- For large mammal species, the analysis determined that dispersal and movement impacts were the only potential effects to consider; except for the javelina where impacts to all habitat types (i.e., dispersal, foraging, shelter, and breeding) were considered.

Impact determinations were based on calculations of disturbance acreage to vegetation types, including Creosote Bush-White Bursage and xeroriparian as associated with habitat types for species, i.e., general habitat, and dispersal/movement habitat. Impact indicators were assigned based mainly on the assumption that vegetation removal is equal to habitat removal and that impact would be considered a long-term impact since desert vegetation does not recover rapidly. Alternative comparisons were based on the relative acreage of impacts to each vegetation resource as compared to what exists within the analysis area.

4.8.2 No Action Alternative

The Parkway would not be developed and existing land uses in the project area would continue. Management of wildlife resources and other uses would continue at the discretion of BLM management under the LSFO RMP (2012a).

Land in the immediate vicinity of the project area and alternatives would remain primarily open desert. As discussed in Section 3.9.4, current land uses in the area of analysis include dispersed outdoor recreation, agriculture, grazing, utilities, and transportation. Livestock grazing in the project area would continue in two allotments, and is already impacting wildlife resources through resource competition and habitat modification (e.g., fencing and water developments). Vehicle use of the existing dirt roads in and near the project area and the associated impacts to wildlife resources from habitat fragmentation, disruption, and displacement from noise, and wildlife mortality would continue to occur as a result of vehicle use. Limited recreational foot traffic would presumably also continue at low levels. No acres of wildlife resource habitat would be disturbed beyond any currently existing surface-disturbing activities. There would be no impacts to wildlife species beyond any impacts associated with the existing conditions identified in Chapter 3.

4.8.3 Impacts Common to all Action Alternatives

The analysis of effects to wildlife resources is divided into three categories for further clarification: 1) general wildlife, 2) special-status wildlife species, and 3) wildlife connectivity/wildlife movement corridors.

The overall impacts are similar across all alternatives and sub-alternatives, with only minor differences between each alternative and sub-alternative. Therefore, no detail discussion for each alternative or sub-alternative is required.

4.8.3.1 Phase I

4.8.3.1.1 GENERAL WILDLIFE

Phase I construction and operation of the Parkway could affect general wildlife species through increased nighttime light levels, noise disturbance, long-term and short-term displacement, habitat degradation, habitat loss, habitat fragmentation, and individual mortality. As described in Chapter 3, numerous general wildlife species (reptiles, amphibians, birds, and mammals) are known to occupy the project area and region. The ROW contains habitat for general wildlife, including Creosote Bush-White Bursage and xeroriparian vegetation. As described in Chapter 2, portions of the ROW would be entirely disturbed from construction and result in a loss of habitat, whereas other areas would be disturbed but then reclaimed. In addition, noise from construction and travel on the Parkway once constructed would increase the risk of displacement. Thus, implementation of any of the alternatives would result in a site-specific, minor, long-term, direct impact to general wildlife species habitat. In addition, noise and mortality impacts would result in a local, moderate, long-term, direct impact to general wildlife species due to traffic along the Parkway.

Studies indicate that increased light levels may be detrimental to some groups of wildlife and beneficial to others; for example, animals can experience increased orientation or disorientation and could be either attracted to or repulsed by additional illumination (Longcore and Rich 2006). Within and adjacent to the project area, light from artificial illumination at night could disrupt animals and result in changes in dispersal, reproductive behavior, communication patterns, and foraging success (Longcore and Rich 2006). Laboratory, field, and observational studies of impacts of artificial night lighting on amphibians have been documented and include: changes in hormone production, growth, and metabolism; short-term changes in activity and reproduction; and impacts on foraging activity (Buchanan 1993; Wise 2007). In addition, increased light levels may create an attraction of terrestrial invertebrates to light and the subsequent attraction of predatory insectivores, including bats. Any such attraction could be beneficial for foraging but detrimental through the risk of mortality from interaction with moving vehicles. A local, moderate, long-term, direct impact to general wildlife species due to increased light along the ROW would occur.

4.8.3.1.2 SPECIAL-STATUS WILDLIFE SPECIES

Of the 17 species listed under the ESA by the USFWS in Maricopa County, no species have the potential to occur in the project area under any alternative. The BLM LSFO identifies 71 priority wildlife species that have the potential to occur within the Field Office. This includes species listed as BLM Sensitive, SGCN, BCC, Game Species, and also species protected under the MBTA, and BGEPA. Twenty-seven of the priority species listed for the LSFO by the BLM have the potential to occur or are known to occur within the project area, and consist of reptiles, amphibians, birds, and mammals, including bats. Refer to Chapter 3 and the tables in Appendix H, Species Tables, for a complete list of these 27 species and details regarding their habitat.

The implementation of any of the alternatives during construction and operation of a two-lane Parkway could affect special-status wildlife species through increased nighttime light levels, noise disturbance, long-term and short-term displacement, habitat degradation, habitat loss, habitat fragmentation, and individual mortality.

As described in Chapter 3, habitat (including breeding, foraging, cover, and/or movement habitat) for 27 special-status wildlife species exists in the project area and region. The ROW contains habitat for

special-status wildlife, including Creosote Bush-White Bursage vegetation, xeroriparian vegetation, and potential Sonoran desert tortoise habitat. However, a recent survey of the project area for the Sonoran desert tortoise found no tortoise or sign or indication, that Sonoran desert tortoise were using the area (Appendix M). As described in Chapter 2, portions of the ROW would be entirely disturbed from construction and result in a loss, whereas other areas would be disturbed but then reclaimed. In addition, noise from construction and travel on the Parkway once constructed would increase the risk of displacement and mortality. Thus, the implementation of any of the alternatives during construction and operation of a two-lane Parkway would result in a site-specific, minor, long-term, direct impact to special-status wildlife species habitat. In 2018 the BLM performed a survey of the 2.7 mile portion of the proposed Parkway that crosses through Category I habitat and found that the area is not suitable (Appendix M), therefore impacts to Sonoran desert tortoise habitat would be negligible and long-term.

In addition, light, noise, and mortality impacts would result in a regional, moderate, long-term, direct and indirect impact to special-status wildlife species.

4.8.3.1.3 WILDLIFE CONNECTIVITY/WILDLIFE MOVEMENT CORRIDORS

Habitat fragmentation is one of the most serious threats to biodiversity worldwide (Saunders et al. 1991; Wilcox and Murphy 1985), and one of the principal factors contributing to habitat fragmentation has been road construction (Meffe and Carroll 1997). Wide-ranging species such as large carnivores and migratory big-game species are particularly vulnerable to extinction in fragmented habitats because of large home ranges, low densities, slow population growth rates, and long-range dispersal patterns (Crooks 2000, 2002; Noss et al. 1996; Woodroffe and Ginsberg 1998). The creation of new roads and road modifications, such as increased numbers of traffic lanes, repaving of lanes, and construction of non-permeable wildlife fencing, may have short- and long-term impacts to connectivity between the habitat patches that the roads bisect. Not only do these roadways separate previously connected areas of habitat, they also create a barrier effect for organisms attempting to move between patches (Yanes et al. 1995).

Increasing highway mortality also plays a role in eliminating more individuals from a population (Harris and Gallagher 1989). There has been an increasing amount of research devoted to the role played by roads in impacting both rare and common wildlife species that have the potential to occur within the analysis area, including mountain lions (Beier 1996; Clevenger and Waltho 2005; Dickson and Beier 2002), bighorn sheep (Bristow and Crabb 2008; Cunningham and DeVos 1992; McKinney and Smith 2007; Singer et al. 2001), deer (Huijser et al. 2007), snakes (Rosen and Lowe 1994; Rudolph et al. 1998), and desert tortoises (Boarman and Sazaki 1996, 2006).

The implementation of any of the alternatives during construction and operation of a two-lane Parkway could affect the movement of wildlife species within the Rainbow Valley analysis area through noise disturbance, long-term and short-term displacement, habitat fragmentation, and individual mortality. Two designated wildlife movement corridors—the Sierra Estrella–SDNM linkage as designated in the Arizona Wildlife Linkages Assessment (2006) and a BLM-designated wildlife corridor adopted from the AGFD Bighorn Sheep Management Plan—are present within the project area. These linkage zones are located within the southern portions of the alternatives and have been shown to be the preferable areas for wildlife species to use when moving from one mountain range to another. Implementation of any of the alternatives during construction and operation of a two-lane Parkway would result in a site-specific, minor, long-term, direct impact to wildlife movement corridors, and in a regional, moderate, long-term, direct impact to wildlife species through decreased connectivity, habitat fragmentation, and individual mortality.

4.8.3.2 Additional Phase(s)

4.8.3.2.1 GENERAL WILDLIFE

The impacts of construction and operation of additional lanes would be the same type as the Phase I construction, but of greater magnitude because of increased habitat loss, and additional noise and lighting due to increased traffic and the additional lanes.

4.8.3.2.2 SPECIAL-STATUS WILDLIFE SPECIES

The impacts of construction and operation of additional lanes would be the same type as the Phase I construction, but of greater magnitude because of increased habitat loss, and additional noise and lighting due to increased traffic and the additional lanes.

4.8.3.2.3 WILDLIFE CONNECTIVITY/WILDLIFE MOVEMENT CORRIDORS

The impacts of any of the alternatives of additional lanes would be of the same type as the Phase I construction, but of greater magnitude. Future wildlife studies may be conducted by the BLM and/or AGFD while the two lanes are present to determine if the wildlife crossing are being used and are sufficient to maintain wildlife movement, or if additional measures are needed either for crossing the Phase I two lane or for additional lane construction.

4.8.4 All Alternatives and Sub-Alternatives, Direct and Indirect Impacts Comparison

A summary of impacts to wildlife habitat by alternative is presented in Table 4-22 and 4-23.

Table 4-22. Summary of Impacts to Wildlife Habitat (approximate acres) for Phase I Construction

	BLM Preferred Alternative (acres)	Proposed Alternative A (acres)	Alternative C (acres)	Alternative H (acres)	Sub- Alternative F (acres)	Sub-Alternative G (acres)
General Wildlife Habitat	121	122	141	141	22	19
Special-Status Species Habitat	121	122	141	141	22	19
Wildlife Connectivity/ Corridors	14 (BLM)	14 (BLM)	28 (BLM)	25 (BLM)	0 (BLM)	0 (BLM)
	20 (Private)	19 (Private)	12 (Private)	13 (Private)	7 (Private)	8 (Private)
	<u>2 (State)</u>	<u>2 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>
	36 Total	35 Total	40 Total	38 Total	7 Total	8 Total

Table 4-23. Summary of Impacts to Wildlife Habitat (approximate acres) for 250 ft. ROW

	BLM Preferred Alternative (acres)	Proposed Alternative A (acres)	Alternative C (acres)	Alternative H (acres)	Sub- Alternative F (acres)	Sub-Alternative G (acres)
General Wildlife Habitat	471	475	549	554	84	72
Special-Status Species Habitat	471	475	549	554	84	72
Wildlife Connectivity/ Corridors	82 (BLM)	82 (BLM)	152 (BLM)	105 (BLM)	0 (BLM)	0 (BLM)
	113 (Private)	107 (Private)	75 (Private)	103 (Private)	40 (Private)	47 (Private)
	<u>13 (State)</u>	<u>13 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>	<u>0 (State)</u>
	208 Total	202 Total	227 Total	208 Total	40 Total	47 Total

4.8.5 Residual Impacts

Residual impacts would include the long-term removal of habitat for general wildlife and special-status wildlife species within the project area. Species that currently inhabit the project area would be permanently displaced into the adjacent areas. The noise and mortality impacts would remain a possibility even with the implementation of the design features; however, these impacts would be reduced through implementation of design features. Lastly, the voluntary City-committed design features will help to provide safe passage for wildlife species across the road, but road-related barrier effects may still occur and result in reduced gene flow between some wildlife populations (Appendices P and R).

4.8.6 Short-Term Uses versus Long-Term Productivity

Since the paved road bed surface will remain for an indeterminate amount of time in the future and these areas are not expected to ever be reclaimed and revegetated, long-term productivity of this general wildlife and special-status wildlife species habitat will be negatively impacted. In addition, those areas that are reclaimed will have a lag in return to full productivity, given that desert ecosystems can take up to 50 years to return to pre-disturbance conditions (Guo 2004; Kade and Warren 2002). Thus, the Parkway would reduce the amount of habitat available for these wildlife species and also displace wildlife individuals from habitat that has been removed or degraded as discussed in Section 4.5.9 Vegetation Resources and Tables 4-14 through 4-17. In addition, the road barrier effect to wildlife connectivity areas would affect wildlife movement patterns and potentially reduce population gene flow.

4.8.7 Irreversible and Irretrievable Commitment of Resources

Irreversible commitment of resources would include the paved road bed surface, since it will remain for an indeterminate amount of time in the future and these areas are not expected to ever be reclaimed and revegetated. Implementation of any of the action alternatives would result in 1) the irreversible and irretrievable loss of between approximately 121 and 471 acres of general wildlife and special-status wildlife species habitat, and 2) irreversible impacts consisting of wildlife displacement, wildlife disruption, and potential mortality of wildlife using the area for dispersal and movement within the region, including the designated wildlife corridors.

4.9 LANDS AND REALTY

4.9.1 Analysis Area, Approach and Assumptions

The area of analysis for analyzing direct and indirect impacts to land use resulting from the Parkway is defined as the 250-foot-wide construction ROW for all alternatives and sub-alternatives. This area of analysis was selected to account for potential direct and indirect impacts to existing land uses. Cumulative impacts to land use are analyzed in the Rainbow Valley area of analysis, discussed in Section 3.9.3.

It is assumed that there would be no other use of the ROW except for transportation.

4.9.2 No Action Alternative

The project area would be available to other uses that are consistent with LSFO RMP (BLM 2012a). Much of the project area is undeveloped land. Land in the immediate vicinity of the project area and alternatives would remain primarily open desert. As discussed in Section 3.9.3, current land uses in the area of analysis include dispersed outdoor recreation, agriculture, grazing, utilities, and transportation.

4.9.3 Impacts Common to all Action Alternatives

4.9.3.1 Phase I and Additional Phase(s)

The primary land use change associated with the construction of all action alternatives is the development of natural, undeveloped or agricultural land for all construction phases in the project area.

If the Parkway is authorized, the project would have to conform to the terms and conditions of previously issued ROWs in the project area. Therefore, there would be no impacts to utility corridors and other existing ROWs. There would be no impact to commercial, industrial uses, mineral entry, and public or private airports.

Other authorized land uses may experience minor displacement since these activities are dispersed and not concentrated within certain areas.

Potential effects on land use are generally associated with project construction rather than operation because once the ROW grant has been made by BLM and construction begins, no further changes to land use patterns in the project footprint are expected. Access to existing land uses surrounding the project area may be temporarily impacted during the construction period. Access to all existing land uses would be maintained.

The Parkway may indirectly impact residential, industrial and commercial development in Rainbow Valley, consistent with the City's current land use plan (see Diagram 4 and Section 4.16 for Social and Economic Conditions).

4.9.4 Alternative A, Proposed Action, Direct and Indirect Impacts

4.9.4.1 Phase I

Construction may alter but would not reduce the opportunities for access to the public lands, including SDNM, state lands, or private lands.

The conversion of approximately 84 acres from undeveloped land to a Parkway would constitute a small change when compared to the expansive amount of open space and BLM-administered land in the surrounding region. The impact would be negligible and long-term.

There would be no impact to land tenure.

4.9.4.2 Additional Phase(s)

Construction of additional lanes would result in the additional conversion of approximately 474 acres of undeveloped land to transportation use. No existing or future LUAs would be impacted. The impact would be minor and long-term.

4.9.5 Alternative C, Direct and Indirect Impacts

Direct and indirect impacts to land use would be the same as described under Alternative A, in addition to the following impacts.

4.9.5.1 Phase I

The alignment would occupy the least amount of the existing EPNG multi-use utility corridor of all the action alternatives. Phase I construction would result in the conversion of 97 acres of undeveloped land to transportation use.

Approximately 11 acres of BLM-administered lands identified suitable for disposal would be encumbered by the 250-foot ROW. Adjacent BLM-administered lands identified as suitable for disposal may change in value.

4.9.5.2 Additional Phase(s)

Construction of additional lanes result in the additional conversion of approximately 548 acres of undeveloped land to transportation use. The impact would be minor and long-term.

4.9.6 Alternative H, Direct and Indirect Impacts

4.9.6.1 Phase I

Phase I construction would result in the conversion of approximately 97 acres of undeveloped land to transportation use. The impact would be minor and long-term.

Approximately 11 acres of BLM-administered lands identified suitable for disposal would be encumbered by the 250-foot ROW. Adjacent BLM-administered lands identified as suitable for disposal may change in value.

4.9.6.2 ADDITIONAL PHASE(S)

Construction of the additional lanes would result in the additional conversion of approximately 554 acres of undeveloped land to transportation use. The impact would be minor and long-term.

4.9.7 Sub-Alternative F, Direct and Indirect Impacts

4.9.7.1 Phase I

Phase I construction would result in the conversion of approximately 15 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

There would be no impact to land tenure.

4.9.7.2 Additional Phase(s)

Construction of the second phase would result in the additional conversion of approximately 84 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

4.9.8 Sub-Alternative G, Direct and Indirect Impacts

4.9.8.1 Phase I

Phase I construction would result in the conversion of 13 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

There would be no impact to land tenure.

4.9.8.2 Additional Phase(s)

Construction of additional lanes would result in the additional conversion of approximately 72 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

4.9.9 BLM Preferred Alternative, Direct and Indirect Impacts

4.9.9.1 Phase I

Phase I construction would result in the conversion of 84 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

There would be no impact to land tenure.

4.9.9.2 Additional Phase(s)

Construction of additional lanes would result in the additional conversion of approximately 471 acres of undeveloped land to transportation use. The impact would be negligible and long-term.

4.9.10 Residual Impacts

Residual impacts to land use for all action alternatives would be the same. The result of the construction of the Parkway would be the long-term conversion of land uses into use for transportation purposes. This residual impact is negligible and long-term.

4.9.11 Short-term Uses versus Long-term Productivity

Under all action alternatives, the project area lands would be converted from their existing respective land uses to a transportation-based land use. The current productivity of the project area for grazing, agriculture, and dispersed recreation would be unavailable for as long as the Parkway exists. Although there would be a loss in the capability of the project area to provide for grazing, agriculture, recreation, and utilities, the new transportation land use would provide safe transportation for residents, emergency services, and infrastructure maintenance.

4.9.12 Irreversible and Irretrievable Commitment of Resources

There would be an irreversible and irretrievable conversion of approximately 399 to 554 acres to transportation if the Parkway were implemented because of the presence of a paved Parkway.

4.10 LIVESTOCK GRAZING

4.10.1 Analysis Area, Approach and Assumptions

Direct and indirect impacts to grazing management resulting from the Parkway are analyzed within the two-lane, 250-foot ROW, and areas of allotments that would be separated or made unusable for livestock grazing by the Parkway. The analysis assumes the 250-foot ROW would be fenced to exclude cattle. This area of analysis was selected to account for potential direct and indirect impacts to existing grazing management. Environmental consequences analyzed consider the compatibility of the alternatives with both existing grazing management and applicable planning documents governing the livestock grazing use of project lands. Impacts to grazing management will be determined by changes to the acres and AUMs available for livestock grazing and changes to livestock movement and/or access to the allotments, brought on by the implementation of the Parkway.

It is assumed that there would be no other use of the project area except for transportation. Impacts to grazing management in the area of analysis from the implementation of the Parkway are discussed in terms of changes to the existing use. BLM and ADOT road inventories were used to identify potential road crossings that would require cattle guards should the Preferred Action or other action alternatives be selected.

4.10.2 No Action Alternative

BLM-administered land on which the project is proposed would continue to be managed under the existing conditions. As discussed in Section 3.10, authorized grazing would continue on the Beloit and Conley grazing allotments in the project area, in accordance with the SDNM RMP and the LSFO RMP and terms and conditions of each permit. There would be no impact to the movement of cattle within the Beloit or Conley grazing allotments.

4.10.3 Impacts Common to all Action Alternatives

All action alternatives would split portions of pastures within the Beloit grazing allotment. Although the overall reduction of ROW acres of grazing land and AUMs tied to these lands is relatively small compared to the overall grazing allotment size and authorized AUMs, grazing productivity would decrease due to the segregation of pastures preventing cattle from accessing facilities such as reservoirs, stock tanks, corrals, and troughs on the opposite side of the Parkway. Because the BLM Preferred Alternative and action alternative alignments are different, the alteration of each pasture by the Parkway would vary for each

alternative, as described below. Livestock movement would also be restricted on the Conley Allotment between the SDNM boundary and the Parkway, based on the alternative and sub-alternative selected.

The proposed alignments of some of the action alternatives may affect existing pasture fencing alignments within the Beloit Allotment; however, if the Parkway alignment intersects a fence, the BLM and the City will work with the grazing permittee to determine methods to minimize impacts to the allotment. Though most existing fencing alignments are not anticipated to change, additional fencing will be required on both sides of the 250-foot ROW. The number of access roads and fence lines crossed by the alternative Parkway alignments would be described under the direct and indirect impacts for each alternative and sub-alternative.

Changes in cattle foraging habits would likely occur where pasture boundaries and pathways to water sources were reconfigured due to the Parkway. This is because the grazing process is influenced by livestock's diet selection and the animals' physiological needs such as water or thermal regulation (e.g., shade) (Heitschmidt and Stuth 1991). The localized impact of grazing to vegetation and soil tends to dissipate with distance from points of concentration such as water available to livestock (Washington-Allen et al. 2004). Livestock would likely forage outward from reconfigured pasture boundaries, which would change the pattern of previous foraging and pathways to water sources. These changes in foraging and pathways to water sources would not affect livestock productivity but could result in minor surface disturbances as the livestock would likely use areas that may not have been heavily used previously.

The introduction of traffic associated with the construction and operation of the Parkway would increase the risk of injury or death to individual cattle through vehicle strikes, if cattle are grazing in the area. Fencing and cattle guards applied during construction and operation of the Parkway would help minimize hazards to cattle grazing near these portions of the allotments.

The AUMs in Table 4-24 were calculated with the assumption that every acre within each allotment has equal forage value. Authorized AUMs on each allotment were divided by the total acres of each allotment to determine the forage value of a single acre, which was used to determine the AUM reduction based on the acres within the two-lane and 250-foot ROW of each alternative.

Table 4-24. 250 foot ROW Reduced Acreage and AUM Comparison for all alternatives and sub-alternatives (approximate acres and AUMs)

	BLM Preferred Alternative (Acres/AUMs)	Proposed Alternative A (Acres/AUMs)	Alternative C (Acres/AUMs)	Alternative H (Acres/AUMs)	Sub-Alternative F (Acres/AUMs)	Sub-Alternative G (Acres/AUMs)
Beloat	297 ac / 4 AUMs	297 ac / 4 AUMs	431 ac / 6 AUMs	380 ac / 4 AUMs	0 ac / 0 AUMs	0 ac / 0 AUMs
Conley	102 ac / 3 AUMs	178 ac / 3 AUMs	118 ac / 1 AUM	174 ac / 2 AUMs	84 ac / 0 AUMs	72 ac / 0 AUMs
Total	399 ac / 7 AUMs	475 ac / 7 AUMs	549 ac / 7 AUMs	554 ac / 6 AUMs	84 ac / 0 AUMs	72 ac / 0 AUMs

4.10.4 Alternative A, Proposed Action, Direct and Indirect Impacts

4.10.4.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives. Project construction would include the clearing of natural vegetation from the project area and livestock would no longer have access to the fenced ROW.

Table 4-25. Additional waters needed to maintain water distribution following Parkway Construction

	BLM Preferred Alternative	Proposed Alternative A	Alternative C	Alternative H	Sub-Alternative F	Sub-Alternative G
Beloat	0	0	2	1	0	0
Conley	0	0	0	0	0	0
Total	0	0	2	1	0	0

Two livestock tanks and corrals may be directly affected by the Parkway. These range improvement projects are located on the south side of the (EPNG) Pipeline Road at the boundary between the Conley and Beloat allotments. Comb's Tank, a dirt reservoir, is on the north of Komatke Road on the Beloat Allotment and Charco Reservoir, also a dirt reservoir, and associated corrals are south of Komatke Road on the Conley Allotment. The City and BLM would coordinate with each permittee to modify current fencing to enable continued use of the range improvements. The City would reimburse the permittees for necessary modifications. If it is determined that one or both livestock waters would be affected by this alternative, the City would install an alternative water source for livestock, or for modifications to the current dirt reservoirs for continued use (Appendix P).

4.10.4.2 Livestock Movement

The Proposed Alternative A is not expected to affect current allotment boundary alignments of either grazing allotments. However, new fencing along the ROW would create additional pastures on the Beloat allotment: one southwest of the Parkway on the SDNM and a smaller pasture northeast of the Parkway, serviced by water at the ranch headquarters. On the Conley Allotment, the Proposed Alternative A would segregate approximately 320 acres of BLM land west of the Proposed Alternative A route. The SDNM portion of the Conley Allotment is closed to livestock grazing and would not be directly affected. If the Parkway alignment intersects a fence, BLM and the City will work with the grazing permittee to determine methods to minimize impacts to the allotment. The proposed alignment under Alternative A would cross 11 access roads identified in the BLM road inventory and 7 roads identified in the ADOT road inventory; these roads are typically two-track access roads providing access to range improvements. Where the Parkway is proposed to cross these access roads, a cattle guard or gate must be installed to prevent cattle from accessing the ROW. The impact to livestock movement would be minor and long-term.

4.10.5 Alternative C, Direct and Indirect Impacts

Direct and indirect impacts to livestock grazing would be largely the same as under Alternative A, except as described below.

4.10.5.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives.

BLM administered lands available for grazing included in the Conley Allotment west of the Alternative C alignment would no longer be accessible since the Alternative C alignment would sever the existing pasture at this location. The Beloat Allotment's southwest pasture would be cut off from water sources at the ranch headquarters. The southeast pasture's southwest corner would also be cut off from water sources. Due to

the lack of water sources, these parcels would no longer be a viable part of the existing grazing operation. Without the installation of additional water sources, the loss of acreage would be a long-term adverse impact.

Three major livestock facilities on the Beloit Allotment would be directly affected. A corral and shipping pen located on ASLD lands at the corner of Bullard and Patterson would require compensation and relocation, and South Well on 115th Avenue (BLM) would require mitigation by development of waters on each side of the Parkway. The ROW may also impact the headquarters of the Beloit Ranch. Mitigation would include relocation or financial compensation for shipping pens, ranch headquarters, corrals, a well, dirt tanks, and a pasture and fences. These facilities would have to be modified, or eliminated and rebuilt at alternative locations, through mitigation from the City, and coordination with the BLM and grazing permittee (Appendix P and R). No livestock waters on the Conley Allotment would be affected.

4.10.5.2 Livestock Movement

The alignment would cross 29 roads identified in the BLM road inventory and nine roads identified in the ADOT road inventory. Where the Parkway is proposed to cross these access roads, a cattle guard or gate must be installed to keep cattle off the Parkway while allowing access. As stated above, BLM-administered lands available for grazing included in the Conley Allotment west of the alignment would no longer be accessible since it would prevent livestock movement from the northeast pasture into the northwest pasture. The loss of livestock movement ability would be a negligible long-term, adverse impact. The Parkway would split portions of the southwest and southeast pastures of the Beloit Allotment and would have a minor and long-term adverse impact.

4.10.6 Alternative H, Direct and Indirect Impacts

Direct and indirect impacts to livestock grazing would be largely the same as under Alternative A, except as described below.

4.10.6.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives.

The direct impacts to range improvement projects would be similar under Alternative H, described under Alternative C. The ranch headquarters may require similar voluntary City-committed design features as described for Alternative C. The state-leased corrals and shipping pens at the corner of Bullard Avenue and Patterson Road would likely be able to remain in place. South Well on BLM-administered lands would not be affected by this alternative. No livestock waters on the Conley Allotment would be affected by this alternative.

4.10.6.2 Livestock Movement

This alignment would cross 21 roads identified in the BLM road inventory and 10 roads identified in the ADOT road inventory. Where the Parkway is proposed to cross these access roads, a cattle guard or gate must be installed, in order to keep cattle off the Parkway while allowing the grazing permittee and public access. The Parkway would segregate the headquarters of the Beloit Allotment from the eastern pastures of the allotment. These impacts to access on the Beloit Allotment would be minor and long-term.

4.10.7 Sub-Alternative F, Direct and Indirect Impacts

4.10.7.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives. BLM administered lands available for grazing included in the Conley Allotment west of the Sub-Alternative F alignment would no longer be accessible since the Sub-Alternative F alignment would sever the existing pasture at this location. Since there are no existing livestock waters in this area, the pasture would be unusable unless water is supplied. The loss of these acres would be a long-term, adverse impact.

4.10.7.2 Livestock Movement

This alignment of the Parkway is not expected to affect current fencing alignments within either of the grazing allotments; however, if the Parkway alignment intersects a fence, BLM and the City will work with the grazing permittee to determine methods to minimize impacts to the allotment. The proposed alignment would cross one road identified in the BLM road inventory and four roads identified in the ADOT road inventory. Where the Parkway is proposed to cross these access roads, a cattle guard or gate must be installed, in order to keep cattle off the Parkway while allowing access. The loss of livestock movement ability would be a long-term, adverse impact.

4.10.8 Sub-Alternative G, Direct and Indirect Impacts

4.10.8.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives. BLM-administered lands available for grazing included in the Conley Allotment west of the Sub-Alternative G alignment would no longer be accessible since the Sub-Alternative G alignment would split the existing pasture at this location. Since there are no existing livestock waters in this area, the pasture could not be used for grazing. The loss of these acres would be a long-term, adverse impact.

4.10.8.2 Livestock Movement

This alternative is not expected to affect current fencing alignments within either of the grazing allotments; however, if the alignment goes intersects a fence, BLM and the City will work with the grazing permittee to determine methods to minimize impacts to the allotment. The proposed alignment would cross three roads identified in the BLM road inventory and three roads identified in the ADOT road inventory. Where the Parkway is proposed to cross these access roads, a cattle guard or gate must be installed, in order to keep cattle off the Parkway while allowing access. As stated above, BLM-administered lands available for grazing included in the Conley Allotment west of the alignment would no longer be accessible since the alignment would prevent livestock from moving in and out of the existing pasture at this location. The loss of livestock movement ability would be a long-term, adverse impact.

4.10.9 BLM Preferred Alternative, Direct and Indirect Impacts

Direct and indirect impacts to livestock grazing would be largely the same as under the Proposed Alternative A and Sub-Alternative G, except as described below.

4.10.9.1 Grazing Allotments

Table 4-24 and 4-25 show acres and AUMs that would be removed from livestock grazing use for the life of the Parkway and number of additional waters needed on each allotment to maintain water distribution for all alternatives and sub-alternatives.

4.10.9.2 Livestock Movement

In relation to Proposed Alternative A and Sub-Alternative G, approximately 400 additional private land acres within the northeast pasture of the Conley Allotment would remain accessible due to Alternative G, located further west, replacing the last 2 miles of Proposed Alternative A. The impact to livestock movement on the Beloit and Conley allotments would be minor and long-term.

4.10.10 Residual Impacts

Residual impacts would include the long-term loss of access to acreage within the proposed ROW and minor surface disturbances from changes in cattle foraging habits due to reconfigured pastures and pathways to water sources.

Fencing of the entire proposed ROW would reduce the likelihood of impacts to cattle from vehicle strikes. Under all action alternatives and sub-alternatives, even with application of BMPs, the existing Beloit and Conley allotments would be reduced in size and fragmented to accommodate the proposed Parkway.

4.10.11 Short-Term Uses versus Long-Term Productivity

Under all action alternatives, construction of the Parkway would affect the long-term vegetation productivity of the project area via vegetation removal. The land within the 250-foot ROW would be unavailable for grazing for as long as the Parkway exists.

4.10.12 Irreversible and Irretrievable Commitment of Resources

There would be an irretrievable loss of grazing land uses due to the presence of a paved Parkway.

There would be irreversible loss to grazing management resources, because these areas are not expected to ever be reclaimed and revegetated; thus, long-term productivity of grazing management will be negatively impacted. Implementation of any of the action alternatives for the 250-foot ROW would result in the irreversible and irretrievable loss of between approximately 52 and 76 acres on the Beloit and between approximately 18 and 31 acres on the Conley.

4.11 RECREATION MANAGEMENT

4.11.1 Analysis Area, Approach and Assumptions

Direct and indirect impacts to recreation resulting from the Parkway are analyzed within Rainbow Valley, including within the 250-foot-wide ROW. Environmental effects analyzed consider the compatibility of the alternatives with existing recreation activities and settings governing the various types of recreational use of project lands. Impacts to recreation will be determined by potential changes to the type of recreational activities, the settings needed to support those activities, and desired recreational experience, brought on by the implementation of any of the project alternatives. To assess changes to recreation opportunities resulting

from the implementation of the Parkway, this analysis also uses information from the visual resources and noise sections.

It is assumed for this analysis that the greater the degree of contrast, the more visible the Parkway will be on the landscape, and the greater the impact to the recreational activities, settings, and experiences. See Section 3.6 for more detailed information on visual resources analysis methodologies and results.

It is assumed that there would be no other use of the ROW except for transportation. Impacts to recreation in the project area from implementation of the Parkway are discussed in terms of potential losses to the recreation experiences, settings, and opportunities.

4.11.2 No Action Alternative

The Parkway would not be developed and existing land uses in the project area would continue. Management of recreation activities and other uses would continue at the discretion of BLM management under the LSFO RMP (2012a).

4.11.3 Impacts Common to all Action Alternatives

4.11.3.1 Phase I and Additional Phase(s)

For some recreationists, the presence of and noise from construction equipment and its associated activities would detract from the recreation opportunity, experience, and setting. For others, the presence of equipment and construction activities would not detract from the recreation opportunity, experience, or setting because it may attract interest.

All action alternatives would result in a direct loss of recreational settings and opportunities in the ROW, and would be replaced by the Parkway. Recreational use of the land in the ROW during the lifespan of the Parkway ROW grant would be precluded.

Opportunities for dispersed recreation in the adjacent areas would be interrupted during construction of the Parkway due to changes in patterns of access caused by construction traffic. Increases in vehicular traffic on the roads and along utility corridors would deter or delay some recreationists from the area due to safety concerns, noise, and traffic congestion.

The noise of construction and operation, the times of day or night at which it is produced, and the proximity of the Parkway would diminish the natural quiet needed to support the recreational experience for a typical visitor seeking solitude. However, as visitors venture deeper into adjacent recreation areas and farther from the project area, this noise intrusion would lessen and eventually cease. The effect on individual visitors would vary, depending on their desired recreation activity and experience and tolerance to the intrusion (Section 3.14).

Although the operation and presence of a new Parkway in a previously not-recommended-to-passenger-vehicles area may attract some recreational users, those seeking dispersed recreation opportunities would see change to the existing landscape as a substantial modification. Public land would be available in the immediate vicinity for recreational activities, therefore activities could continue and would lessen the direct impact of loss of land available for dispersed recreation. Indirect adverse impacts would occur to users in adjacent areas who seek opportunities for solitude or seek the limited light pollution required for certain recreation experiences (BLM 2012b).

The 20-foot-wide construction access road will be reclaimed after Phase I construction. While the construction road would be posted “Closed to Public Use” the potential for unauthorized use of the construction access road would occur and could lead to route proliferation within the project ROW. Any unauthorized use of the road would cease following the reclamation of the access road, which would be closed, reseeded, and revegetated so that it could return to a natural state.

4.11.4 All Alternatives and Sub-Alternatives, Direct and Indirect Impacts Comparison

The removal of vegetation and construction of the Parkway in the project area would have an indirect impact on adjacent recreational users in the analysis area (e.g., users in SDNM and LSFO public lands) by altering the quality of the recreational setting. The impacts to recreation across all alternatives are similar, except Alternatives C and H will have less impact on opportunities for solitude in the North Maricopa Mountains Wilderness Area than the BLM Preferred Alternative and Alternative A. Sub-Alternatives F and G would occur wholly on private lands and there would be no loss of dispersed recreation. In all Alternatives there are long-term, local and minor impacts to recreation opportunities and settings.

4.11.5 Residual Impacts

There are minor impacts to dispersed recreation opportunities due to the ROW.

4.11.6 Short-Term Uses versus Long-Term Productivity

During construction there may be short-term restrictions on recreation access to ensure public safety. Long-term, there is a minor loss of recreational opportunities within the boundaries of the ROW.

4.11.7 Irreversible and Irretrievable Commitment of Resources

The loss of recreational opportunities within the ROW are irreversible and irretrievable commitment of resources to transportation use.

4.12 TRAVEL MANAGEMENT

4.12.1 Analysis Area, Approach and Assumptions

The area of analysis for travel management is the extent of Rainbow Valley (Section 3.12).

4.12.2 No Action Alternative

Under the No Action Alternative, the Parkway would not be developed, and the existing transportation and traffic patterns and infrastructure in and around the project area would remain unchanged. Generally, the project area and ROW are relatively inaccessible. Commuters to and from the greater Phoenix area are limited in viable options such as SR 238 to SR 347 (Maricopa Road) to I-10; or SR 85 to I-10. Recent population growth has resulted in increased traffic volumes that have significantly reduced the LOS on these existing roadways. There would be no opportunity to use or implement future transit options on the Parkway.

4.12.3 Impacts Common to all Action Alternatives

The following is a discussion of potential impacts on existing transportation systems within an immediate vicinity (2 miles or less) of the action alternatives. The systems described include state highways, county roads, BLM roads, utility company roads, access roads, and other private roads in the analysis area. Some roads will be upgraded as a result of the Parkway (Table 4-26)

**Table 4-26. Summary of Action Alternatives and Sub-Alternatives:
Roads to be Upgraded by Alternative**

Action Alternative or Sub-Alternative		Roads to be upgraded	Total Approximate Miles Impacted
BLM Alternative	Preferred	Rainbow Valley Road, Riggs Road, 170 th Avenue	4
Alternative A		Rainbow Valley Road, Riggs Road	3
Alternative C		Rainbow Valley Road, Patterson Road, Bullard Avenue	9
Alternative H		Rainbow Valley Road, Patterson Road	6
Sub-Alternative F		None	0
Sub-Alternative G		170 th Avenue	1

4.12.3.1 Phase I

The addition of two lanes would provide improved access and emergency services to/from the City to Mobile and the Rainbow Valley area, BLM administered lands, State and private lands, a beneficial and long-term impact. The new road would result in reduced traffic volumes on SR 238, SR 347 to I-10, and SR 85 to I-10. During construction, it is likely that motorists would continue to use the utility company roads while the proposed Parkway is constructed. Construction-related traffic is unlikely to affect these roads. After construction travel on the (EPNG) Pipeline Road would decrease. Change in LOS on these roads is not quantified in this analysis.

The two-lane Parkway capacity would accommodate approximately 24,000 vehicles per day. Construction of the two-lane Parkway is, in part, intended to relieve future increases in traffic volume development within the region. Higher traffic volumes will likely increase travel on the secondary and BLM roads, resulting in additional degradation to the roadbeds.

Where the two-lane Parkway intersects existing roads, existing legal public access would be retained. A gate or cattle guard would be installed at each road intersection (Appendix P).

The 20-foot-wide construction access road will be reclaimed after Phase I construction. While the construction road would be posted "Closed to Public Use" the potential for unauthorized use of the construction access road would occur and could lead to route proliferation within the project ROW. Any unauthorized use of the road would cease following the reclamation of the access road, which would be closed, reseeded, and revegetated so that it could return to a natural state.

4.12.3.2 Additional Phase(s)

The additional lane construction options would provide additional access to/from Goodyear to Mobile and the Sonoran Valley. Four and six lanes would result in additional reduction in traffic volumes on SR 238, SR 347 to I-10, and SR 85 to I-8. Change in LOS on these roads is not quantified in this analysis. The four-lane Parkway capacity would accommodate approximately 48,000 vehicles per day. The six-lane Parkway capacity would accommodate approximately 72,000 vehicles per day. Higher traffic volumes will continue to increase travel on the secondary and BLM roads, resulting in additional degradation to the roadbeds.

Where the four- or six-lane Parkway would intersect existing BLM roads, existing legal public access would be retained. A gate or cattle guard would be installed at each BLM road intersection.

The effects to travel management resulting from the proposed Parkway's presence and use may result in increased accessibility to the surrounding public lands. Impacts would be moderate, long-term and local.

4.12.4 Residual Impacts

Residual impacts to travel management would be the same as described under Impacts Common to All for all action alternatives.

4.12.5 Short-term Uses versus Long-term Productivity

Under all action alternatives, travel management would be expanded from existing routes, improving emergency response time and access to the Community, a beneficial and long-term impact.

4.12.6 Irreversible and Irretrievable Commitment of Resources

There would be no irreversible and irretrievable commitment of resources of travel management resources because existing access is currently open to the public and would remain open when construction is complete.

4.13 SPECIAL DESIGNATIONS

4.13.1 Analysis Area, Approach and Assumptions

This section outlines the impacts to special designation areas from the implementation of any of the project alternatives. As discussed in Section 3.13, special designation areas considered in this analysis include: 1) the North and South Maricopa Mountains Wilderness areas, 2) Sierra Estrella Wilderness, 3) the SDNM, 4) Butterfield Overland Stage Route and the Anza NHT. The wilderness areas are managed to maintain or enhance the natural character and vegetation communities, to provide opportunities for primitive recreation and solitude, and to provide habitat for a diversity of fauna (BLM 1995). SDNM is managed to protect biological, archaeological, and historical resources (Presidential Proclamation 7397). The impacts to the Butterfield Overland Stage Route and Anza NHT are discussed in Section 4.3, Cultural and Heritage Resources.

These special designations discussed in Chapter 3 lie outside of the immediate project area footprint (with the exception of the Butterfield Overland Stage Route and Anza NHT); however, they would be subject to indirect and cumulative impacts from changes to the existing viewshed, increases in noise, changes in access, and impacts to wildlife from activities associated with construction and operation of the Parkway. Impacts from noise are evaluated in terms of whether they would increase the ambient noise

environment, and thus impact a visitor's recreation experience. Impacts to special designation's recreation characteristics are evaluated in terms of whether there would be a change in opportunities for solitude and primitive recreation, a change in the ability of the visitor to access the SDNM or wilderness areas, a change to the current vegetation communities, and changes to the natural or undeveloped character of the landscape. To assess these changes, this analysis uses information from the noise, wildlife, and visual sections of this chapter. The analysis area for special designations is not a defined polygon but rather any topographic point within the wilderness areas or SDNM where sights or sounds from the Parkway may be experienced by a visitor.

4.13.2 No Action Alternative

Under the No Action Alternative, the Parkway would not be developed and the existing conditions of the special designation areas would continue.

4.13.3 Impacts Common to all Action Alternatives

4.13.3.1 Phase I and Additional Phase(s)

4.13.3.1.1 SONORAN DESERT NATIONAL MONUMENT

Conversion of the existing landscape from a natural setting to the two-lane transportation corridor would have long-term positive and adverse impacts to recreation opportunities and users of the adjacent areas of the SDNM. The impact would be greatest in the areas of SDNM immediately adjacent to the alternative alignment, where the sights and sounds of the alternative alignment would change the existing viewshed of SDNM (Section 3.6).

Under all action alternatives, there would be an increase of traffic in the local area during the construction and operation of the Parkway. Traffic would come primarily from Rainbow Valley Road and SR 238. This increase in traffic could cause both short-term and long-term adverse impacts to SDNM wildlife because of vehicle strikes and barriers to movement. With improved access to SR 238, the SDNM may experience increased visitation once new recreational developments are constructed adjacent to SR 238. Unmanaged use along SR 238 could result in impacts to SDNM resources. Noise from all action alternatives would have a direct affect to SDNM. Noise from Phase I construction based on analysis from Section 3.14 although noticeable would be below acceptable levels due to the distance from SDNM. Additional construction would cause the levels to exceed acceptable levels just within the boundary however BMP's and Design features could reduce these levels (Appendix R).

4.13.3.1.2 WILDERNESS AREAS

The North and South Maricopa Mountain Wilderness would experience the same indirect impacts to the viewsheds and recreational settings as described above for SDNM, under all action alternatives. The Sierra Estrella Wilderness is 10 miles to the east, this distance would reduce the effects of the view, and it is expected that the Parkway would not stand out from the existing development in the area. Topography would also mitigate or eliminate these effects. Construction and operation, under all action alternatives would create noise. The increase noise may be noticeable and similar to receptors M1, M2 and M3 Section 3.14.2 and (Figure 3-18), however, noise would fall well below the acceptable levels based on analysis in Table 3-11. Wilderness values like; an area untrammelled by man, outstanding opportunities for; solitude, primitive, and unconfined recreation would not be affected within any of the designated Wilderness areas.

4.13.3.1.3 NATIONAL HISTORIC TRAILS AND TRAILS UNDER STUDY OR RECOMMENDED AS SUITABLE FOR CONGRESSIONAL DESIGNATION

The Anza NHT and the Butterfield Overland Stage Route were analyzed in detail (Section 4.3).

4.13.4 All Alternatives and Sub-Alternatives, Direct and Indirect Impacts Comparison

For all alternatives, the Parkway footprint would be visible from the special designation areas, and increases in vehicle presence and easier access to the lands adjacent to special designations would occur. Impacts from all phases of construction would be same as described in Section 4.13.3, however Alternatives C and H would be located further away from SDNM in some areas. This would directly impact visual resources and noise within the SDNM, see Sections 4.6 and 4.14, respectively.

4.13.5 Residual Impacts

Regardless of the alternative selected, certain views afforded by the special designations within the analysis area during the construction period would be altered by the presence of construction vehicles, equipment personnel, and emerging new highway facilities. This impact (as well as construction noise) is expected to be considered adverse by some viewers and is an unavoidable consequence of project construction.

See Section 4.8.5 for a discussion of residual impacts to wildlife. Visual impacts are discussed in Sections 4.6.9, Cultural impacts are addressed in Section 4.3.10, and Recreation impacts are addressed in Section 4.11.5 Noise from additional construction of the ROW would be a long-term, local, negative impact to the North-Eastern edge of SDNM.

4.13.6 Short-term Uses versus Long-term Productivity

Implementation of the Parkway would create short-term and long-term changes to the scenic quality of the landscape and would create barriers to wildlife movement and loss of habitat. See Section 4.8.6 for a discussion of residual impacts to wildlife. Visual impacts are discussed in Sections 4.6.10, Cultural impacts are addressed in Section 4.3.11, and Recreation impacts are addressed in Section 4.11.6

4.13.7 Irreversible and Irretrievable Commitment of Resources

The Parkway would have an irretrievable negligible impact on special designation and recreation setting and experience (e.g., solitude, quiet, unobstructed views), including in the adjacent special designation areas.

4.14 NOISE

4.14.1 Analysis Area, Approach and Assumptions

Direct and indirect impacts to existing noise levels resulting from the Parkway are analyzed along the 250-foot-wide project ROW. The environmental consequences analyzed consider the compatibility of the alternatives with both existing Category B land uses and applicable planning documents governing the use of project lands as they relate to these uses.

It is assumed that no uses other than transportation are planned in the project area. Impacts to Category B land uses within the bounds of the analysis from implementation of the Parkway are discussed in terms of

the potential to increase the peak hour equivalent traffic noise levels above the noise level criteria of 64 dBA as defined in the Zoning Ordinance, Article 9 Special Districts (City 2006). Article 9 Special Districts are defined as “areas that, due to the unique nature of the area (including but not limited to areas adjacent to freeways, city centers, or rural residential areas), surrounding land uses and/or physical improvements or natural features, require special regulations and approval process above and beyond the regulations and approval process of the underlying zoning districts” (City 2006).

4.14.2 No Action Alternative

The No Action Alternative assumes that none of the transportation improvements identified in the Goodyear Major Plan Amendment, including the widening of SR238 and the expansion of the local roadway network, would occur and the existing segmented network of unpaved roadways would remain and the rural character of the project area would be preserved. Dispersed outdoor recreation including the use of OHVs would remain unchanged.

Existing noise levels would not be affected, because local traffic would continue to use the unpaved roadway network and there would be no construction of the Parkway.

4.14.3 Impacts Common to all Action Alternatives

The 250-foot-wide ROW is the same for each alternative under all construction phases analyzed, and includes 25-foot-wide drainage easements on both sides. The Parkway design speed is 65 mph and the posted speed limit would be 55 mph for all analyzed proposed alternatives and Parkway designs.

Traffic noise is most dominant during peak traffic hour or LOS C number of vehicles traveling at the posted speed. Based on the planned posted speed limit of 55 mph, the peak traffic hour traffic volume would be 1,400 vehicles per lane, based on the upper limit for low-volume multilane highway from the Highway Capacity Manual 2000 (Transportation Research Board 2000).

Noise levels from vehicle traffic for each of the designed Parkway alternatives were estimated using the Washington State Department of Transportation (WSDOT) typical noise levels for traffic volumes at a given speed (WSDOT 2011: Table 7-3). The Parkway design speed of 65 mph was used to estimate the sound level in dBA at 50 feet from the Parkway from the WSDOT traffic volume tabulated values. For this assessment, soft site reduction of 4.5 dB per doubling of distance was used.

4.14.3.1 Phase I

Based on a peak traffic hour volume of approximately 2,800 vehicles, traffic noise levels at approximately 50 feet from the Parkway are estimated at 77 dBA. A distance of approximately 389 feet from the Parkway is necessary to attenuate traffic noise levels to below 64 dBA. A substantial noise level increase is equal to or greater than 15 dBA.

4.14.3.2 Additional Phase(s)

For the expansion of additional lanes the total Parkway width would be 200 feet, which includes an 84-foot-wide median separating two 42-foot-wide paved surfaces with 8-foot-wide graded shoulders. Based on a peak traffic hour volume of up to approximately 8,400 vehicles, traffic noise levels at approximately 50 feet from the Parkway are estimated at 82 dBA. A distance of approximately 809 feet from the Parkway is necessary to attenuate traffic noise levels to below 64 dBA.

The relative impacts of each of the alternatives (A, C, and H) and sub-alternatives (F and G) were analyzed by comparing the closest receptors and type because noise levels would be the direct impact of the Parkway, see in Table 4-27.

Table 4-27. Impacts to FHWA-defined Category B Land Uses from the Parkway Alternatives Closest Receptor Location by Use Type and Potential Impacts

Affected Land Use Type	Alternative A		Alternative C		Alternative H		Sub-Alternative F		Sub-Alternative G		BLM Preferred Alternative	
Residential	No.	Location	No.	Location	No.	Location	No.	Location	No.	Location	No.	Location
Detached single-family homes and mobile homes (M2-M6)	1	2,800 ft.	16	At ROW	2	At ROW	1	At ROW	1	7,500 ft.	2	2,800 ft. & 7,500 ft.
Schools (M1)	1	2,400 ft.	1	2,400 ft.	1	2,400 ft.	1	1,400 ft.	1	6,000 ft.	1	6,000 ft.
SDNM		500 ft.		500 ft.		500 ft.		1,700 ft.		1,700 ft.		500 ft.- 1,700ft
Outdoor Recreation	Various locations throughout project area including SDNM.		Various locations throughout project area including SDNM.		Various locations throughout project area including SDNM.		Various locations throughout project area including SDNM.		Various locations throughout project area including SDNM.		Various locations throughout project area including SDNM.	
Impact Summary	Future peak hour noise level increase above existing is expected to be < 15 dBA.		Future peak hour noise level increase above existing is expected to be < 15 dBA.		Future peak hour noise level increase above existing is expected to be < 15 dBA.		Future peak hour noise level increase above existing is expected to be < 15 dBA.		Future peak hour noise level increase above existing is expected to be < 15 dBA.		Future peak hour noise level increase above existing is expected to be < 15 dBA.	
	Future peak hour noise levels below 64 dBA.		Future peak hour noise levels below 64 dBA.		Future peak hour noise levels below 64 dBA.		Future peak hour noise levels below 64 dBA.		Future peak hour noise levels below 64 dBA.		Future peak hour noise levels below 64 dBA.	
	Impacts to SDNM from Phase I construction although noticeable would be below acceptable levels due to the distance from SDNM.				Impacts to SDNM from Phase I construction although noticeable would be below acceptable levels due to the distance from SDNM.						Impacts to SDNM from Phase I construction although noticeable would be below acceptable levels due to the distance from SDNM.	
	Additional construction would exceed acceptable levels just within the boundary however Design features could reduce these levels (Appendix R)				Additional construction would exceed acceptable levels just within the boundary however Design features could reduce these levels (Appendix R)						Additional construction would exceed acceptable levels just within the boundary however Design features could reduce these levels (Appendix R)	

4.14.4 Alternative A, Proposed Action, Direct and Indirect Impacts

The closest residential unit to Alternative A is approximately 2,800 feet, and the closest school is approximately 2,400 feet. Based on these assumptions, the noise levels at 2,400 and 2,800 feet are anticipated to be less than 64 dBA for all construction phases. It is anticipated that the increase in noise levels from existing noise levels is less than 15 dBA because of the distance from potentially sensitive receptors to the Parkway. The impact on noise levels for potentially sensitive receptors would be long-term but negligible.

The operation of Alternative A may result in indirect impacts to Category B land uses if the Parkway creates land use amendments brought on by development interest. Future development would increase the proximity of Category B land uses to the improved Parkway network in the project area.

4.14.5 Alternative C, Direct and Indirect Impacts

The impacts to existing Category B land uses under Alternative C would be the same as described for Alternative A for all construction phases, except for a residential unit that would be approximately at the ROW. The noise level is anticipated to exceed 64 dBA with a greater than 15 dBA noise level increase from existing noise levels for this residential unit. The implementation of Alternative C would therefore result in long-term, adverse impact to noise levels for potentially sensitive receptors located along the ROW, and long-term, negligible impact to noise levels for potentially sensitive receptors not located along the ROW.

As with Alternative A, the future development caused from the operation of Alternative C would increase the proximity of receptors to the improved roadway network in the project area, resulting in indirect impacts to planned Category B land uses.

4.14.6 Alternative H, Direct and Indirect Impacts

The impacts to existing Category B land uses under Alternative H would be the same as described for Alternatives A and C for all construction phases, except for residences located approximately at the ROW. The noise level is anticipated to exceed 64 dBA with a greater than 15 dBA noise level increase from existing levels for these residential units. The implementation of Alternative H would therefore result in long-term, adverse impact to noise levels for potentially sensitive receptors located along the ROW, and long-term, negligible impact to noise levels for potentially sensitive receptors not located along the ROW.

Indirect impacts from future land uses would be the same as described for Alternatives A and C.

4.14.7 Sub-Alternative F, Direct and Indirect Impacts

The closest residential unit to Sub-Alternative F is located approximately at the ROW. Therefore, under all construction phases, the noise level is anticipated to exceed 64 dBA with a greater than 15 dBA noise level increase from background for this residential unit. Sub-Alternative F would also move the Parkway to a distance of approximately 1,400 feet from the school. However, the noise level from the Parkway at this distance is still anticipated to be less than 64 dBA for the school, with a less than 15 dBA noise level increase from existing levels. The implementation of Sub-Alternative F would therefore result in a long-term, adverse impact to noise levels for potentially sensitive receptors located along the ROW, and a long-term, negligible impact to noise levels for potentially sensitive receptors not located along the ROW.

Indirect impacts from future land uses would be the same as described for Alternatives A, C, and H.

4.14.8 Sub-Alternative G, Direct and Indirect Impacts

The closest residential unit to Sub-Alternative G is approximately 7,500 feet, and the closest school is approximately 6,000 feet. Based on these assumptions, the noise levels at these distances are anticipated to be less than 64 dBA for all construction phases. Due to the distance of potentially sensitive receptors from the Parkway, it is anticipated that the increase in noise levels from existing noise levels would be less than 15 dBA. The impact on noise levels for potentially sensitive receptors would therefore be long-term but negligible.

Indirect impacts from future land uses would be the same as described for Alternatives A, C, and H and Sub-Alternative F.

4.14.9 BLM Preferred Alternative, Direct and Indirect Impacts

The impacts to existing Category B land uses under the BLM Preferred Alternative would be the same as described for Alternative A for all construction phases, except there would be two residential units; one is at 2,800 feet and one is at 7,500 feet. The closest school is approximately 6,000 feet. The noise levels are anticipated to be less than 64 A-weighted decibels (dBA) for all Parkway designs. It is anticipated that the increase in noise levels from existing levels is less than 15 dBA. The impact on noise levels for potentially sensitive receptors would therefore be long-term but negligible.

Indirect impacts from future land uses would be the same as described for Alternatives A, C, and H and Sub-Alternative G.

4.14.10 Residual Impacts

There are residual noise impacts in Alternatives C and H, as described above.

4.14.11 Short-term Uses versus Long-term Productivity

Under all action alternatives, the project area would be converted from existing land uses to transportation. The current productivity of the area in terms of noise is one with minor contributions from intermittent local residential and recreational vehicle use in the project area.

Although there would be a loss in the capability of the project area to maintain relatively low noise level conditions with few traffic noise sources, the new transportation network would provide increased mobility to the traveling public and future area residents.

4.14.12 Irreversible and Irretrievable Commitment of Resources

There would be an irretrievable loss of relatively low noise levels if the Parkway were implemented, because of the presence of commuter and recreational traffic on a paved Parkway. There may be an irreversible loss of relatively low noise level conditions because the Parkway could enable residential development and expansion of the transportation system in the area.

4.15 HAZARDOUS MATERIALS AND PUBLIC SAFETY

4.15.1 Analysis Area, Approach and Assumptions

The area of analysis for hazardous materials and solid waste includes the 250-foot-wide project ROW for each alternative alignment (the area where these materials would be generated and used), and the additional search distances specified in ASTM Standard E 1527-05 (ASTM 2005) see Chapter 3.

Proposed transportation routes to disposal sites were not included in the area of analysis because the most likely disposal site is the Butterfield Station Landfill, operated by Waste Management, Inc., which is located adjacent to the east of the southern terminus of the project area. Environmental consequences analyzed consider the compatibility of the alternatives with currently existing hazardous materials, as well as additional hazardous materials and solid waste that may be generated under each alternative.

This analysis assumes a variety of safety-related plans and programs would be developed and implemented, including a spill prevention plan (SPP) and a SWPPP, to ensure safe handling, storage, and use of hazardous materials. A number of BMPs are recommended to prevent hazardous materials from coming in contact with the environment. BMPs would be detailed in the SWPPP and SPP (Appendices P and R). These plans would detail BMPs such as retaining sediments on the construction site by soil erosion and sediment control practices and proper refueling and maintenance procedures for equipment. Implementation of these plans, as well as compliance with Federal, state, and local regulations, would provide sufficient mitigation to ensure that there would be no direct or indirect impacts from the use of hazardous materials or the generation of solid waste during construction activities.

It is assumed that there would be no other use of the project area, except for transportation. Impacts from hazardous materials in the area of analysis from implementation of the Parkway are discussed in terms of changes from the existing use.

4.15.2 No Action Alternative

Under the No Action Alternative, the land on which the project is proposed would continue to be managed under the existing conditions. Activities in the area, such as livestock grazing, agriculture, and dispersed recreational use, would not result in the generation, use, or disposal of major quantities of hazardous materials and hazardous and solid waste within the project area. This includes the Butterfield Station Landfill (AZ Solid Waste Facility No: 07032700.01, EPA ID No. AZD983481813). The status of existing facilities described in Section 3.16.2 would remain unchanged.

4.15.3 Impacts Common to all Action Alternatives

The implementation of any of the alternatives would result in the use of hazardous materials and creation of solid waste during construction. Potential hazardous materials associated with construction activity could include solvents, metals, petroleum products (oils, fuels, asphalt degreaser, lubricants, etc.), plated products, hazardous substances, paint, treated-wood products, and other products typically associated with Parkway construction sites. Hazardous materials may also include herbicides and other construction chemicals such as concrete products, sealants, and wash water associated with these products. Solid wastes may include paper, wood, metal, cured concrete, and general trash. Direct and indirect impacts during operation of the Parkway would be no more than from other roadways in use today.

Construction grading and utility installation activities may impact the Hamilton Homes Property at the southwest corner of Rainbow Valley and Riggs Roads, where a leaking underground storage tank (LUST) was reported in 1999. The leaking tank was permanently removed in May 2006, and the site was closed in

January 2007 with soil levels meeting risk-based corrective action Tier 1 standards. The precise location of the former LUST is unknown and may be within or outside of the 250-foot-wide project ROW (SWCA 2009c, 2009d). If the project footprint is found to overlap with the former LUST site, additional design feature may include soil sampling and proper removal and disposal of any remaining contaminated soils.

Construction grading and utility installation activities may impact the RM Cat Environmental Services Remediation Area cleanup site, which is mapped in the general vicinity of the project area at the southern terminus of the corridor at Maricopa Road (SR 238). However, the exact location of the remediation area is unknown and is likely to be along the railroad tracks south of Maricopa Road (SR 238) because RM Cat Environmental Services (now called Balfor Environmental) specializes in train derailments and spill cleanup. The cleanup site was listed with a status of “not active” on October 31, 2006 (SWCA 2009c, 2009d). If the project footprint is found to overlap with the remediation area, additional design features may include soil sampling and proper removal and disposal of any remaining contaminated soils. Note that this cleanup site is only common to the major alternatives; Sub-Alternatives F and G are not in the vicinity of this site.

The voluntary City-committed design features in Appendix R would be implemented to prevent spills and leaks of hazardous materials, and to provide for adequate containment and cleanup if they do occur. With adherence to LORS and the voluntary City-committed design features described in Chapter 2, and implementation of the SWPPP and SPP, construction and operation of any of the alternatives would not result in direct or indirect impacts from hazardous materials or solid waste to surrounding soils, surface water, or groundwater.

Although the specific equipment and construction methods for the Parkway have not been determined, it is likely that additional hazardous materials would be used and stored, during construction of each phase. Thus, it follows that construction for all construction phases would use and store hazardous material during construction.

4.15.4 Alternative A, Proposed Action, Direct and Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives. Direct or indirect impacts from hazardous material used and stored within the project area are not anticipated for any of the phases under this alternative.

4.15.5 Alternative C, Direct and Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives, except as described below.

Alternative C is longer than Alternative A, therefore, construction activities would likely consume a comparably higher amount of hazardous materials and would generate a comparably higher amount of solid waste. The quantity of hazardous materials on the project area at a given time would likely be the same as for Alternative A, but would remain on-site for a longer period of time because construction would likely take longer. Direct or indirect impacts from hazardous materials within the project area are not anticipated for any of the phases under this alternative.

Construction grading and utility installation activities may impact the RM Cat Environmental Services Remediation Area cleanup site, which is mapped in the general vicinity of the project area at the southern terminus of the corridor at SR 238. However, the exact location of the remediation area is unknown and is likely to be along the railroad tracks south of SR 238 because Balfor Environmental specializes in train

derailments and spill cleanup. The cleanup site was listed with a status of “not active” on October 31, 2006 (SWCA 2009c, 2009d). If the project footprint is found to overlap with the remediation area, additional design features may include soil sampling and proper removal and disposal of any remaining contaminated soils.

4.15.6 Alternative H, Direct and Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives, except as described below.

Alternative H is longer than Alternative A, therefore, construction activities would likely consume a comparably higher amount of hazardous materials and would generate a comparably higher amount of solid waste. The quantity of hazardous materials on the project area at a given time would likely be the same as for Alternative A but would remain on-site for a longer period of time because construction would likely take longer.

Direct or indirect impacts from hazardous materials within the project area are not anticipated for any of the phases under this alternative.

4.15.7 Sub-Alternative F, Direct and Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives, except as described below.

While this sub-alternative avoids the RM Cat Remediation site, and is the shortest and most direct route, it passes directly through the Butterfield Station Landfill, an active municipal solid waste landfill (AZ Solid Waste Facility No. 07032700.01, EPA ID No. AZD983481813) operated by Waste Management, Inc. This would require relocating over 5 acres of existing landfill contents to construct a Parkway, and include major and costly additional design features such as extensively sampling the waste for contaminants, proper removal and disposal of the waste elsewhere, and re-engineering of existing landfill liner systems and leachate and methane collection systems. Direct impacts would include exposing potentially hazardous waste materials to the environment, and exposing personnel to the potentially hazardous waste materials. Existing landfill liners in the area would be removed, and could compromise adjacent liner material in the process. Landfills generally have setback requirements from public Parkways, and special variances from various state and federal agencies may be needed. Indirect impacts at the landfill could also include short-term disruption of existing leachate and methane collection systems, which could put the environment and personnel at risk.

4.15.8 Sub-Alternative G, Direct/Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives, except that this sub-alternative avoids both the RM Cat Remediation site and the Butterfield Station Landfill. This applies to all phases of Sub-Alternative G.

4.15.9 BLM Preferred Alternative, Direct and Indirect Impacts

Direct and indirect impacts from the use of hazardous materials and the generation of solid waste would be the same as those described under Common to all Alternatives, except that this alternative avoids both the RM Cat Remediation site and the Butterfield Station Landfill. This applies to all phases of the BLM Preferred Alternative.

4.15.10 Residual Impacts

No residual impacts are anticipated from the use of hazardous materials or creation of solid waste under any of the action alternatives or sub-alternatives.

4.15.11 Short-Term Uses versus Long-Term Productivity

Voluntary City-committed design features in Appendix R would be implemented to prevent spills and leaks of hazardous materials, and provide for adequate containment and cleanup if they do occur. With adherence to LORS and the implementation of the SWPPP and SPP, and potentially the additional design features for the Hamilton Homes and RM Cat Remediation sites, the construction and operation of the Parkway would not result in a change of productivity of the project area due to impacts from hazardous materials to surrounding soils, surface water, or groundwater.

4.15.12 Irreversible and Irretrievable Commitment of Resources

With adherence to LORS and the voluntary City-committed design features, implementation of the SWPPP and SPP, and potentially the additional design features for the Hamilton Homes and RM Cat Remediation sites, there would be no irreversible commitment of resources caused by the use of hazardous materials and the generation of solid waste under any of the action alternatives. The voluntary City-committed design feature would be implemented to prevent spills and leaks of hazardous materials, and provide for adequate containment and cleanup if they do occur.

4.16 SOCIAL AND ECONOMIC CONDITIONS

4.16.1 Analysis Area, Approach and Assumptions

Social and economic conditions include analyses of population and demographics, economic sectors and employment, environmental justice, and quality of life for the proposed project. The study area for the socioeconomic analysis consists of the communities of Goodyear and Maricopa, as well as Maricopa and Pinal counties. This analysis focuses on the populations closest to the project area and includes a broad cross section of demographics in which the project is situated. The data presented for state-, county-, and Census Tract-level demographics are used for comparison purposes. The impacts analysis for socioeconomics evaluates the social and economic effects, both positive and negative, of the construction and operation of the Parkway.

Social and economic impacts are quantified where possible. However, where quantification of impacts is not possible, the analysis includes a qualitative discussion of possible effects. The analysis includes separate but integrated approaches to addressing social, economic, fiscal, and environmental justice impacts of the Parkway.

4.16.2 No Action Alternative

Under the No Action Alternative, the Parkway would not be built, and impacts to social and economic conditions would remain similar to current conditions. No direct, paved access would be available to the annexed areas south of the City connecting Mobile, and people would continue to use the (EPNG) Pipeline Road which presents certain safety risks to public traffic. The primary purpose of the project would not be met and no direct access to/from the City to the SVPA would exist to facilitate traffic movement. Emergency services would not have a route that would allow timely response to residents of the SVPA.

Currently residents, municipal services, and commuters only have two viable options for traveling to and from the municipal boundaries of the City south to Mobile and beyond:

- 1) An easterly route that uses SR 238 east to SR 347, SR 347 north to 51st Avenue, 51st Avenue to I-10, and I-10 west to Goodyear approximately 56 miles;
- 2) A westerly route that uses SR 238 west to SR 85, SR 85 to I-10, and I-10 east to Goodyear—approximately 68 miles.

Recent population growth has created increasing traffic volumes on area roadways that have reduced the operating conditions on these roadways. Some members of the public, including residents of Mobile, as well as others from outside the community, have been using the unpaved (EPNG) Pipeline Road to travel to and from Mobile and the City. The (EPNG) Pipeline Road runs northwest-southeast and generally parallels the eastern boundary of the SDNM. Four existing natural gas pipelines (three EPNG gas lines and one Transwestern gas line) are buried directly beneath the maintenance road, and in some places they lie only a few inches beneath the surface. Unauthorized vehicles using the maintenance road also exacerbate erosion problems. Under the No Action Alternative, continued and additional public use of the (EPNG) Pipeline Road would persist, causing further safety risks.

From a regional perspective, the Parkway was conceptualized to provide an important connection within the regional transportation framework established by the MAG in the RTP (2017) and the Hidden Valley Transportation Framework Study (MAG 2009). Under the No Action Alternative this important link in the regional transportation network would not be realized.

Under the No Action Alternative, both short-term and long-term negative, moderate to major impacts would occur both locally and regionally, as travelers and residents within the SVPA would not have a viable roadway connection from central Goodyear to Mobile, SR 238, and beyond. These travelers may continue to use Pipeline Road which is unsafe for large volumes of traffic. In the long-term, as population growth continues, use of the (EPNG) Pipeline Road may become increasingly unsafe, because the purpose of the road is for maintenance access and it is not built to accommodate large volumes of vehicular traffic.

4.16.3 Impacts Common to all Action Alternatives

The introduction of a Parkway in the Rainbow Valley area would provide a transportation corridor where none exists. The impacts common to all action alternatives from the socioeconomic and EJ conditions perspective would include the potential for spurred residential and commercial growth as an indirect effect of the introduction of a Parkway; increased transportation and access to enhanced public health and safety, recreational opportunities, employment opportunities and emergency services; the increase of noise generated by the Parkway; the potential for reduction in wildlife and wildlife habitats; and the potential for reduction in recreationist and viewer experience in this rural, semi-primitive desert landscape. Impacts to socioeconomic and EJ are largely the same for each of the alternatives.

A new transportation corridor would benefit the current residents within the Rainbow Valley area as well as residents of Goodyear, Mobile, Maricopa, and beyond, by providing a safer alternative than the (EPNG) Pipeline Road, and improved transportation connections. Economic impacts would not be directly affected by the introduction of a road. EJ populations would also benefit from the proposed Parkway, since it could provide increased access to public transit options for citizens who do not own a vehicle. The Parkway may also impact the quality of life values in Rainbow Valley; improved access to the area would likely increase higher density developments, which could cause overall housing prices and taxes to increase. Impacts to social and economic conditions from the introduction of the Parkway would be long-term, local and moderate.

4.16.3.1 Population and Demographics

Under all action alternatives, Phase I would start with the construction of two-lanes. When the City determines that there is greater need to accommodate growth in traffic, an additional four- or six-lanes may be constructed. The staffing for project construction would be expected to draw from the existing construction workforce in the region, including metropolitan Phoenix. According to Arizona 10-Year Industry Employment Projections (2016 through 2026), construction-related jobs are expected to grow by over 47,000 and construction represents one of the major sectors for projected employment gains, (Arizona Office of Economic Opportunity 2018). Construction workers would commute to the Parkway from their local residences rather than relocate because of the availability of construction workers within the Phoenix metropolitan area. Therefore, there would be no anticipated increase in population or change in demographics in the short-term due to construction.

Development of the SVPA is expected to follow a master-planned approach, which allows for planning at a large scale and considers recommended zoning and land use strategies to guide future development. Planned use of the SVPA anticipates a mix of residential, employment, and supportive land uses within the 67 square miles.

The Parkway would likely contribute to increased populations in Rainbow Valley. This may result in shift of the demographic composition in the area, from residents in rural areas, to new residents in higher density communities. Employment in agriculture or natural resources would likely shift to more customer services.

4.16.3.2 Economic Sectors and Employment

4.16.3.2.1 ECONOMIC ACTIVITY

Impacts to economic factors include income, cost of living, and taxes and revenues.

4.16.3.2.2 INCOME

The proposed project would provide income to construction workers; therefore, impacts to income will be beneficial and short-term. The time frame for construction of the proposed Parkway is currently unknown and will be dependent upon future transportation funding availability.

Though direct and indirect economic impacts to income are largely unquantifiable, from a qualitative perspective, the operation of a new Parkway where one did not exist previously, will provide access to new areas for residential and commercial development, thus providing more potential opportunities for income generation.

4.16.3.2.3 COST OF LIVING

Given the relatively small number of construction workers needed to build this approximately 16-mile-long Parkway, cost of living is not expected to be affected during construction.

Cost of living may be indirectly impacted by the addition of the Parkway, as studies indicate that proximity to a Parkway reduces travel time and cost of travel, by decreasing the vehicular distances being traveled. In addition, access to a Parkway also allows for the capability of affordable housing to be purchased. In the long-term however, as new residents move into the area, lower income persons are often displaced due to rising housing prices and taxes. Changes to the cost of living index due to the construction and operation of the Parkway is unquantifiable at this time.

4.16.3.2.4 TAXES AND REVENUES

4.16.3.2.4.1 PROPERTY TAX

Construction workers are anticipated to commute rather than relocate to the project area, therefore, the proposed project is not expected to have any effect on property tax. Real property taxes are calculated by Maricopa County based on the assessed value (not current market value) of a property and multiplied by the tax rate set in August of each year. Property tax and the assessed value of real property in the Rainbow Valley area may increase because of the additional development or other factors, and provide long-term increase to county revenues.

4.16.3.2.4.2 SALES, USE, AND LODGING TAXES

Construction workers are anticipated to commute rather than relocate to the project area; therefore, the construction of the Parkway is not expected to have any effect on lodging taxes within the region. In the long-term, increased access to the Rainbow Valley area may promote additional commercial development, visitors and travelers to the area, thus increasing sales and lodging tax revenue.

4.16.3.2.5 HOUSING AND PROPERTY VALUES

Property values reflect two components of value: the land itself and the improvements on the land. Studies have shown that high-capacity Parkways often have a negative impact on property values in the immediate vicinity of the Parkway; however, in general, land values increase with the overall improvement of a community, which would include the addition of transportation improvements. However, an ADOT study has shown that Parkways are typically more conducive to urban development that supports a multitude of activities and the overall desirability of a location (ADOT 2001). A quantitative assessment of changes to housing and property values as a result of the Parkway was not conducted for this analysis.

The housing stock in the Rainbow Valley area is low-density residential, with the largest concentration located near Mobile and SR 238 (at the southern terminus of the proposed Parkway). Though trends in the housing market indicate that conditions are improving, the likelihood of large-scale developments being funded and constructed in Rainbow Valley is unconfirmed at this time. Additional improvement to the housing market in general is expected, and the addition of a Parkway for access to Rainbow Valley will likely improve the appeal of this area for prospective investors and residents, thus providing a long-term benefit for housing and property values.

4.16.3.2.6 ECONOMICS RELATED TO RECREATION

Revenue generated from recreational activities composes a large proportion of state and regional economics (Dean Runyan 2006). As stated in Section 4.11, Recreation Management, all action alternatives would result in a direct loss of recreational settings and opportunities within the transportation ROW. However, recreational activities would still be accessible for the surrounding landscape and the introduction of a Parkway may promote additional recreational opportunities to the area because of improved access.

Each dollar spent by an angler or hunter increases another person's income, enabling that person (or business) to spend more, which in turn increases income for someone else. The process continues to circulate throughout the economy until it is dissipated through 'leakages' in the form of savings or payments for goods and services from outside the local economy. In the end, the cumulative changes in spending, incomes, and employment are a multiple of the initial retail sales spending (AGFD 2002). Changes to recreation-driven economic revenue would not occur as a result of the construction and operation of the Parkway, as no fee-generating activities (e.g., hunting, enthusiast events, etc.) occur in the Rainbow Valley area. Impacts resulting from the proposed Parkway would be considered the loss of opportunity to recreate

in the immediate ROW, which is monetarily unquantifiable. However, increased access to an area for the purposes of recreation could generate recreation-related revenue, though the exact extent of recreation-generated revenue is unknown.

Increased growth in Arizona exerts environmental pressures on surrounding areas as development moves closer to BLM-administered lands. As growth continues and development increases, the demand for access to and use of open space and recreational areas will also increase.

4.16.3.2.7 ECONOMICS RELATED TO LIVESTOCK GRAZING

Revenue generated from livestock grazing is based on resource and livestock conditions. Loss of forage and available AUMs within the proposed Parkway ROW could result in a loss of grazing-related revenue to the Federal government. The Beloit and Conley allotments are identified for active livestock grazing. Each alternative presented for the Parkway would change or reconfigure the livestock grazing allotment boundaries. Reconfiguring livestock grazing allotment boundaries would impact the livestock movement patterns and the allotment permittee. However, as described in the Section 4.10.3, the City will rectify these impacts. This would result in a long-term, negligible and local impact to the economics generated from livestock grazing on the allotments for the allotment permittee.

4.16.3.2.8 EMPLOYMENT

The construction workforce for the Parkway would be expected to be filled by the available labor supply in Maricopa County and Phoenix metropolitan area. Construction employment resulting from the development of the Parkway would be a beneficial, short-term impact to individuals in nearby communities seeking employment. Total employment would have a negligible effect on total employment in the study area because of the available labor supply in Maricopa County and metropolitan Phoenix. In the long-term, development of commercial and industrial centers are planned for Rainbow Valley, and so the Parkway would indirectly benefit employment conditions because it would provide improved access from residences to employment centers.

4.16.3.2.9 UNEMPLOYMENT

Although construction of the Parkway may offer short-term employment opportunities to residents of the study area, overall impact on unemployment in the study area would be negligible. During operation of the Parkway, total impacts on unemployment may indirectly be improved because the Parkway would provide access to employment opportunities for residents.

4.16.3.3 *Environmental Justice*

As discussed in Chapter 3.16.4, consideration of EJ issues is mandated by EO 12898, and is required to be examined by Federal agencies by “identifying and addressing...disproportionately high and adverse human health of environmental effects of their programs, policies and activities on minority and low-income populations in the United States.” For the purposes of this analysis, EJ populations were identified in areas where minority populations composed over 50% of the general population, or were a significantly greater minority population than the reference population, or where low-income populations (those living below the poverty line) exist in larger proportions than the reference population.

Though both minority and low-income populations were identified within the area of analysis, it was determined that the Parkway would not disproportionately impact these communities relative to all other non-minority populations in the analysis area, regardless of income. The identified EJ communities are a minimum of 2 miles from the proposed Parkway, further reducing the chances of disproportionate impacts.

It was also determined that the introduction of a Parkway on other environmental resources that could negatively affect EJ communities (such as air quality, noise, health and human safety, and visual resources) would also not result in a disproportionate or adverse impact on the EJ communities, because these impacts would largely be minor. The addition of a Parkway or transportation access that can also support public transportation would be a beneficial impact to EJ communities as currently no, or limited, access exists in this area, and public transit provides a mobility option for those who do not own a vehicle.

4.16.3.3.1 QUALITY OF LIFE

The Cities of Goodyear and Maricopa, specifically residents closest to the proposed Parkway, would likely notice impacts to their current rural quality of life in terms of transportation and access, noise, recreation experiences, and visual resources. During construction, traffic would increase in the communities near the vicinity of the Parkway. At the peak of construction, construction-related vehicles and equipment would be traveling to and from the construction site on a daily basis, and additional trucks per day would be making trips to and from the site. During operation, traffic volume along SR 238 would continue to increase as a result of greater access to the roadway from the Parkway for commuters from the Rainbow Valley to and from metropolitan Phoenix. Increases in traffic volume could adversely affect the quality of life for those who value living in a rural community. Conversely, for those who reside within the Rainbow Valley area and commute to and from Phoenix, the quality of life may be improved by improved access that the Parkway would provide along with shorter commute times and less traffic. The Parkway would provide long-term benefits, including a better quality of life to residents, by improving emergency response times as vehicles and utility-related traffic would now have direct access to this area.

Construction and operation of a Parkway in the relatively remote Rainbow Valley area is expected to increase the local noise level above the current conditions, both in intensity of the noise and frequency of events. Noise generated by the Parkway is not anticipated to exceed acceptable noise levels for roads. Other noise generators, such as Luke Air Force Base, Barry M. Goldwater Range, the Phoenix-Goodyear Municipal Airport, and the Lufthansa Aviation Training facility, are located well outside of the immediate Parkway and are not anticipated to contribute to major noise increases. Noise generated by OHV use is often the biggest contributing factor to increased ambient noise in the area. Changes in the soundscape can adversely affect the quality of life for nearby residents and recreationists who experience cumulative increases in noise-generating activities. However, construction and operation of a Parkway is subject to local noise ordinances.

Recreation experiences can contribute to a person's overall quality of life and/or shape their identity or self-perceptions. Individuals seeking solitude and a primitive recreation experiences could be adversely impacted by the addition of a Parkway during construction and operation. Conversely, during operations, new and improved roads and utility corridors surrounding the Parkway may provide for more opportunities for access, and quicker, safer connections in the Rainbow Valley area for motorized and non-motorized recreationists. The proposed project may be perceived as a beneficial recreational impact for certain user groups. A full discussion of impacts on recreation is discussed in Section 4.11.

From a visual perspective, the Parkway would change the landscape characteristics, existing landforms, and vegetation in the area, which would contribute to an overall change in the sense of place for members in nearby communities. The shift from a rural, desert landscape to a more developed landscape during construction and operation of the Parkway may adversely impact local residents and visitors to the area who are seeking a rural or semiprimitive view or recreation experience. The viewshed within the immediate foreground and middle ground (up to 5 miles away) would have views of a Parkway where none existed previously. The motion of cars and the Parkway itself would present visual contrast which would result in moderate negative impacts within the long-term to local populations who seek views of natural and unadulterated landscape. A full discussion of impacts on visual resources is discussed in Section 4.6.

Changes to quality of life would be impacted by the construction and operation of the Parkway, and in some cases, the development of this transportation corridor would improve the quality of life for some local populations, depending on destination and objective. Contrarily, for those seeking a rural and semiprimitive experience, the addition of urbanized features such as a Parkway, accompanied by increased traffic volume (i.e., the two-lane Parkway scenario would allow capacity of approximately 24,000 vehicles per day; four lanes would accommodate 48,000 vehicles per day; and six lanes would accommodate 72,000 vehicles per day) would deteriorate elements that define their quality of life.

4.16.3.4 Phase I

Phase I construction would increase access for the area between Goodyear and Mobile. No direct or reasonably quick access is available for vehicular traffic. Additional transportation access would provide community benefits and spur economic growth. The two-lane scenario would accommodate approximately 24,000 vehicles per day and would allow opportunities for public transit (e.g., buses and paratransit or dial-a-ride) to reach populations located within the Rainbow Valley area. Transportation conditions in the Rainbow Valley area do not support expected population growth, and many local travelers use (EPNG) Pipeline Road which is unpaved, and unsafe for public traffic.

Direct and indirect impacts for Phase I construction are the same for all alternatives and sub-alternatives.

4.16.3.5 Additional Phase(s)

Impacts from additional construction would be the same as the two-lane scenario but would accommodate additional traffic volume. The second phase would be constructed dependent upon traffic demand and funding. A second phase Parkway can accommodate 48,000 vehicles per day.

The third phase would be the ultimate build-out of the road (i.e., no additional through lanes would be accommodated within the ROW). Based upon the City of Goodyear General Plan for land uses in Rainbow Valley at build-out, this area would support 86,000 residential dwelling units, and opportunities for approximately 48,000 commercial or industrial jobs within the 4,200 acres of commercially zoned land. Given these build-out conditions, future growth would generate approximately 1.23 million daily vehicle trips, less than half with an origination or destination within Rainbow Valley, indicating that most of the traffic on the Parkway would be from outside of Rainbow Valley. The third phase would accommodate approximately 72,000 vehicles per day and, in tandem with improvements to the overall transportation system of Goodyear and Maricopa County, would support future vehicular traffic demand.

Direct and indirect impacts for additional lane construction are the same for all alternatives and sub-alternatives.

4.16.4 Residual Impacts

The impacts described above are the residual impacts, there are no further measures proposed to minimize these effects.

4.16.5 Short-term Uses versus Long-term Productivity

Under all action alternatives, social and economic conditions would be altered in both the short- and long-term, with new and existing transportation constructed and expanded from existing transportation routes. The current transportation routes within the area do not present enough viable options for commuters to and from the Phoenix metropolitan area. Given existing levels of traffic congestion and use of utility roads for commuting, new transportation uses would provide better means of transportation for residents,

emergency services, and infrastructure maintenance. This could increase long-term productivity in terms of improving quality of life conditions for commuters in the area.

4.16.6 Irreversible and Irretrievable Commitment of Resources

The introduction of a Parkway would create no irreversible or irretrievable commitment of resources for socioeconomic and EJ conditions.

4.17 CUMULATIVE IMPACTS

The following sections discuss the analysis parameters including the geographic CEAA and the time frame for the analysis, the methodology and then the effects by resource. The analysis of cumulative effects by resource considers the Project's contribution to the environmental impacts of other past, present, and future actions and whether the cumulative effects are significant.

4.17.1 Analysis Parameters

The geographic CEAA may vary by resource; however, the following CEAA was used to identify past, present, and reasonably foreseeable future projects that may have a cumulative impact when considered with the proposed Parkway. The CEAA for all resources, unless otherwise specified, is the Rainbow Valley, which is 67 square miles and is located between the SDNM and the Maricopa-Pinal county lines and south from approximately Patterson Road to approximately 2 to 4 miles south of SR 238. This CEAA was chosen because it includes the area where induced growth and reasonably foreseeable future projects, including expansion of the proposed Parkway to connect to I-10, would occur.

In terms of time frame, the cumulative effects analysis for most resources is considered over a period of 30 years, however, as specified in Appendix B, Future Trends and Development, some resources may refer to a CEAA of at least 30 years, but up to 35 to 60 years, tied to the "build-out" of the City of Goodyear's General Plan. Only those projects that are "reasonably foreseeable" are considered in the analysis. For the purpose of this analysis, "reasonably foreseeable" actions are considered where there is an existing decision (i.e., ROD or issued permit), a commitment of resources or funding, a formal proposal (i.e., a permit request). Actions that are highly probable based on known opportunities or trends (i.e., residential development) are also considered. Speculative future developments (i.e., changes in potential land use planning scenarios) are not considered.

4.17.2 Methodology

The following analyses consider 1) the CEAA for each resource, 2) a description of those past, present, and reasonably foreseeable actions that are similar in kind and effect as the proposed Project, or would have considerable impact to the environmental resources to which the Project's effects would cumulatively contribute, and 3) evaluate the potential effects of those actions and consider the significance of those cumulative effects.

Where data were available to do so, cumulative effects are quantified. Where reliable quantitative data could not be found, qualitative data were used to best assess the cumulative effects of the proposed Project.

Like the direct and indirect effects described in Chapter 4, the cumulative effects of the proposed project in combination with other past, present, and reasonably foreseeable future actions are also considered in the context of magnitude and duration. The categories of magnitude and duration are presented to define relative levels of effects and to provide a common language when describing effects.

4.17.3 Reasonably Foreseeable Future Actions

Table 4-28 provides a list of actions to consider when analyzing the incremental impact of the Parkway when added to other past, present, and reasonably foreseeable actions in considered in this analysis. Projects that could result in similar cumulative effects include linear projects such as roadways as well as residential and community development, resource management prescriptions, and BLM designations. Twenty-five projects have been identified that may occur within the CEAA and when combined with the Parkway may result in cumulative impacts.

4.17.3.1 Loop 303

Loop 303 is planned as a six-lane freeway facility extending west from I-17 at Lone Mountain Road, southwest to Grand Ave., running south in the vicinity of Cotton Lane to I-10, and then to SR 30.

Loop 303 south of I-10 is in the planning phase of ADOT's project development process. ADOT is evaluating potential corridors with the establishment of general locations and basic characteristics (number of lanes, interchanges, etc.). Associated activities include environmental studies (air quality, noise, cultural resources, etc.), identification and evaluation of alternatives, general cost estimates, partnerships with public and private stakeholders, and determination of feasibility to start the design phase.

The ADOT and FHWA are conducting a study and environmental overview to identify and evaluate the most feasible transportation corridor/river crossing for the future extension of Loop 303 between the proposed SR 30 and I-11. The proposed corridor could be located within the city of Goodyear and unincorporated sections of Maricopa County. These proposed alternative corridors for Loop 303 are shown in Figure 4-1 (Map Volume) and Diagram 1.

As the Loop 303 south of I-10 projects are still being examined in the corridor-feasibility stages, there are no known plans for how these may or may not tie into the Parkway.

4.17.3.1.1 PROPOSED INTERSTATE 11 (HASSAYAMPA FREEWAY)

Nevada Department of Transportation and ADOT are conducting a study of I-11 and the Intermountain West Corridor, which is a high-level visioning exercise that will also consider potential funding mechanisms for implementation of the I-11. Analysis on the I-11 route is in the initial phases—ADOT has begun the initial Tier 1 EIS process to identify a selected corridor alternative. The I-11 Tier 1 document is expected to be finalized in 2019 (I-11 and Intermountain West 2018). A conceptual centerline for I-11 is shown in Figure 4-1 (Map Volume) and Diagram 1.

As the I-11 project is still being examined in the corridor-feasibility stage, there are no known plans for how it may or may not tie into the Parkway.

Table 4-28. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (approximate miles and acres)

Project/ Action Name	Project Size in the CEAA	Project/ Action Location	Project/ Action Description	Anticipated Project/ Action Schedule
Past and Present Projects				
Historic trails (Butterfield Overland Stage Route and the Anza NHT corridor)	Anza NHT Corridor is 6 miles long and 1 mile wide within CEAA; Butterfield Overland Stage Route is approximately 6 miles long within CEAA	Southern portion of CEAA	National historic trail or historic trail under study for national trails system designation.	Anza NHT Corridor is established; Butterfield Overland Stage Route under study; no timeline.
Agricultural activities	100 acres	Central portion of CEAA, primarily on ASLD lands	Agricultural fields growing cotton, alfalfa, maize, and other crops. Range improvements include barbed-wire fencing, pastures, and corrals.	Ongoing.
Livestock Grazing	114,644 acres	Beloat and Conley allotments (BLM, state, and private lands)	Livestock and ranching operations permitted on the Conley and Beloat allotments.	Ongoing
Recreational Use	CEAA-wide	CEAA-wide	OHV use, hunting, hiking, photography, nature study, wildlife viewing, and geocaching.	Ongoing.
Butterfield Station Landfill	640 acres	Southern portion of CEAA, just north of the community of Mobile	A large-scale landfill that accepts, residential, commercial, and construction refuse.	The landfill has been in operation since the 1940s.
SR 238	9 miles crosses CEAA east to west	Southern portion of CEAA, just south of the community of Mobile	SR 238 is a two-lane highway that provides a direct route from the city of Maricopa to the town of Gila Bend.	SR 238 was paved and designated a state route in 1986.
EPNG Pipeline and access road	18 miles crosses CEAA southeast to northwest	Western portion of CEAA within BLM's designated EPNG multi-use utility corridor	Multiple 36- or 48-inch natural gas pipelines.	Pipeline was constructed in the 1960s.
Transwestern Gas Pipeline and access road	18 miles crosses CEAA southeast to northwest	Western portion of CEAA within BLM's designated EPNG multi-use utility corridor	Multiple 36- or 48-inch natural gas pipelines.	Pipeline was constructed in 1960s.
Salt River Project 500-kV transmission line	18 miles crosses CEAA southeast to northwest	Western portion of CEAA within BLM's designated EPNG multi-use utility corridor	500-kV transmission line.	Line was constructed in the 1970s.
SDNM Proclamation	487,000 acres	Adjacent and just west of BLM's designated EPNG multi-use utility corridor	The SDNM exemplifies the diversity of the Sonoran Desert. The most striking aspect of the plant community within the monument is the extensive saguaro cactus forest. The monument contains three distinct mountain ranges, all separated by wide valleys. The monument is also home to three Congressionally designated wilderness areas, many significant archaeological and historic sites, and remnants of several important national and historic trails.	SDNM was established by President Bill Clinton in 2001.

Table 4-28. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (approximate miles and acres) (continued)

Project/ Action Name	Project Size in the CEAA	Project/ Action Location	Project/ Action Description	Anticipated Project/ Action Schedule
Past and Present Projects (continued)				
City of Goodyear annexation of the SVPA	60,800 acres	The SVPA is the southern portion of Goodyear's Municipal Planning area, beginning at Riggs Road and ending south of SR 238	The SVPA includes the community of Mobile and other rural residents in Rainbow Valley. The City determined that because of current and continuing growth on lands in the SVPA, annexation of the area was necessary to better manage growth and development for current and future residents and address the need for public facilities and services in the SVPA.	SVPA was annexed in 2007.
Roads in SDNM that have been closed to public use	88 miles of dirt roads	Located within SDNM, parallel to Komatke (gas line) Road	The roads have been closed by a decision memorandum because motorized vehicle use off-road has led to visible and persistent damage to the soils and vegetation of lands adjacent to primary access routes, to degradation of the natural and cultural resource objects for which the monument was designated—including a portion of the Anza NHT, and to degradation of the scenic values of SDNM.	Roads were closed to public on August 28, 2007.
MAG Hidden Valley Transportation Framework Study	3,000 square miles	Bounded generally by Gila River on the north, I-8 on the south, I-10 on the east, and 459th Avenue on the west	The study developed conceptual frameworks for transportation corridors, TIs, high-capacity corridors, transit options, and funding.	Study completed in 2009 (MAG 2009).
FCDMC's Rainbow Valley ADMP	515 square miles	The Rainbow Valley ADMP covers an area generally bounded by the Sierra Estrella Mountains on the east, Gila River on the north, the Buckeye Hills/Maricopa Mountains on the west, and extends southward toward I-8	Manages surface water drainage and integrates transportation, residential, and commercial development planning to implement construction that is consistent with drainage planning.	Study completed in 2011 (FCDMC 2011).
Sonoran Solar Energy Project	3,620 acres	Little Rainbow Valley, approximately 6 miles north of Parkway	Concentrated solar thermal power plant with ancillary linear facilities.	ROD was issued in December 2011; no construction has begun as of November 2018.
PM ₁₀ Nonattainment area	515 square miles	Entire Maricopa County, portions of Pinal County	Maximum concentration levels for six criteria pollutants, established and managed by the EPA.	PM ₁₀ rules for Maricopa County implemented 2007.
Sonoran Desert National Monument Target Shooting	~0 - 486,400 acres	Sonoran Desert National Monument	Provide management guidance for recreational target shooting on public lands within the SDNM.	Record of Decision signed March 5, 2018.

Table 4-28. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (approximate miles and acres) (continued)

Project/ Action Name	Project Size in the CEAA	Project/ Action Location	Project/ Action Description	Anticipated Project/ Action Schedule
Past and Present Projects (continued)				
City of Buckeye Parks and Recreation Master Plan	Buckeye Hills, 25,000 acres	City of Buckeye Municipal Planning Area	Plan to manage parks, trails, and open space in the Buckeye Hills area.	Adopted February 16, 2016.
Buckeye Hills Travel Management Plan	679 miles of routes	BLM administered lands in the Buckeye Hills Travel Network	To provide designated motorized and non-motorized access to meet public and resource management needs on BLM-administered lands within an 572,159 acre project area west and southwest of Phoenix.	Draft Environmental Assessment and Travel Management Plan released April 9, 2018.
Reasonably Foreseeable Future Projects				
Future expansion of Rainbow Valley Road north of Riggs Road	Unknown	Anticipated to occur at full build-out of the SVPA (i.e., 35–60 years)	The 2nd or 3rd phase of the Parkway to be implemented by the BLM would include expansions to Rainbow Valley Road north of Riggs Road. This expansion would require additional construction and additional analysis to be determined by the BLM when future (four or six lanes) phases of the Parkway are more imminent.	35 to 60 years out; dependent upon funding availability and future development trends.
Future residential development in SVPA	Unknown; zoned for 25,928 acres	SVPA	Residential development ranging from low-density single-family to high-density.	35 to 60 years out; dependent upon funding availability and future development trends.
Future residential development in the city of Goodyear	50,098 acres	City of Goodyear MPA	Residential development ranging from low-density single-family to high-density.	35 to 60 years out; dependent upon funding availability and future development trends.
State Route Loop 303	25 miles long within CEAA; unknown width	Unknown; alternatives are being examined in northern portion of CEAA	Loop 303 would be a high-speed freeway and would connect I-10 and the future SR 30 to the I-8 corridor.	Construction is planned for 2023.
I-11 (Hassayampa Freeway, CANAMEX corridor)	25 miles long within CEAA; unknown width	Eastern portion of EPNG multi-use utility corridor	I-11 is a high-capacity, commuter type freeway proposed to eventually connect Las Vegas to southern Arizona.	Unknown; dependent upon funding availability and future development trends. Currently undergoing feasibility studies.
Potential for SDNM roads to re-open to the public	88 miles of dirt roads	Eastern boundary of SDNM, parallel to Komatke (gas line) Road	Re-opening roads to the public along (EPNG) Pipeline Road alignment; these roads access SDNM.	Likely to occur in 2019.
BLM Programmatic Weed EA	Lower Sonoran RMP area	Lower Sonoran RMP planning area	Analysis for weed management strategies, including tamarisk and other riparian invasive species.	Approved in 2015.
SR 347 at Pacific Union Railroad	Unknown	City of Maricopa	New SR 347 alignment. EA completed.	Construction begins late 2017 through late 2019

Table 4-28. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (approximate miles and acres) (continued)

Project/ Action Name	Project Size in the CEAA	Project/ Action Location	Project/ Action Description	Anticipated Project/ Action Schedule
Reasonably Foreseeable Future Projects (continued)				
Juan Bautista de Anza Recreation Management Zone, Recreation Plan	54,817	Sonoran Desert National Monument	The purpose of this Project is to protect and prevent the recurrence of damage to the natural and cultural features and objects for which the SDNM was designated.	Project completion 2020. Final EA and ROD completed January 18, 2017.

4.17.4 Cumulative Effect by Resource

Following is a discussion of the cumulative effects of the proposed Parkway, in combination with past, present, and reasonably foreseeable actions. The following analysis discusses resources in the order they are presented in Chapters 3 and 4, with one exception. The section begins with a discussion of the potential cumulative effects of the proposed Parkway in terms of social and economic conditions, with a particular focus on regional and local growth. Although the Parkway is not a project designed to facilitate growth, it is an infrastructure project that could influence the pace, locating, and timing of planned area growth. Regional growth will be the primary source of cumulative effects for all resources analyzed in this document. The cumulative effects to social and economic conditions set the stage for the other resources discussed.

4.17.4.1 Social and Economic Resources

The geographic area of analysis for cumulative impacts to social and economic conditions is the same CEAA as described in the introduction to Cumulative Effects, and includes the Rainbow Valley, and the portion of the City planning area extending from Riggs Road to I-10. This CEAA includes the communities of Mobile, Goodyear, and portions of unincorporated Maricopa. The CEAA for EJ is the same as described for the analysis of direct and indirect effects, and extends up to 14 miles away.

The temporal bounds of analysis for cumulative impacts are defined by build-out conditions. MAG has forecasted population and commercial growth for the region, so although no exact time frame exists, for planning purposes the build-out (or the eventual final development scenario) is expected to occur within 35 to 60 years (Appendix B, Future Trends and Development).

Past and present suburban growth in the CEAA has largely defined the socioeconomic setting described in Chapter 3. Reasonably foreseeable future activities (RFFAs) of particular note are listed in bullet form below, and are those actions that are most likely to have potentially significant, additive impacts for social and economic resources.

The focal RFFAs for consideration in the cumulative effects of growth and improved accessibility, and their effect on other resources (i.e., air quality, noise, wildlife, etc.) are:

- Future expansion of Rainbow Valley Road north of Riggs Road
- Future residential development in Rainbow Valley
- Future residential development in the City of Goodyear
- Loop 303
- I-11 (Hassayampa Freeway, CANAMEX corridor)
- SR 347

The cumulative effect of building the Parkway, along with these additional roads and residential development will accelerate the conversion of Rainbow Valley from a rural undeveloped area to a more fully developed, residential and commercial, urbanizing area. These cumulative impacts will be similar to the impacts described in the Social and Economic Conditions (Section 4.16) above, but will be of greater magnitude, and regional impact.

Additional suburban residential and commercial growth in the Rainbow Valley and City, along with major transportation projects and other reasonably foreseeable future actions in the CEAA, would result in additional environmental pressures, themselves an indirect effect of the cumulative effects of area growth. Those cumulative environmental effects are described below.

4.17.4.2 Air Resources and Climate Change

The CEAA for air resources and climate change cumulative impacts Maricopa and Pinal counties (Map Volume, Figure 4-2). The temporal scope of the cumulative effects analysis is for the life of the BLM ROW grant for construction and operation of the two-lane Parkway. The qualitative analysis of cumulative effects discussed herein is based on the existing conditions of the air resources affected environment described in Chapter 3 and RFFAs.

Regional growth can lead to degradation of air resources. As noted above, the addition of the proposed Parkway would improve accessibility in the Rainbow Valley region; however, the Parkway is not the only factor that would affect regional growth. Reasonable foreseeable develop includes urban growth in the region and building additional local, regional and interstate transportation networks. These potential developments would result in increased urbanization of the area and increased proximity of receptors to an expanded roadway network. In the long-term, concentrations of CO could potentially increase due to increase in traffic, but PM₁₀ concentrations could be reduced by providing paved surfaces for local traffic that is currently using the segmented unpaved roadway network. In addition, construction of the solar energy facility, Sonoran Valley Energy Project, may lead to short-term and minor increases in emissions.

Under all action alternatives and sub-alternatives, construction and operation of the Parkway would result in additional emissions of criteria pollutants. All air emissions would be appropriately minimized to comply with the CAA, MCAQD Air Pollution Control Regulations, the Arizona SIP, and new SIP revision, titled *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area* (MAG 2012).

4.17.4.3 Cultural and Heritage Resources

The CEAA for cultural and heritage resources consists of Rainbow Valley and covers up to 30 years into the future.

Past and present actions that have impacted and continue to impact cultural resources include pipeline and roadway construction, recreational use, and grazing. These actions have had minor, long-term impacts to cultural resources. Specifically, although an EPNG pipeline (and a power line) and its access road cross the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT, they do not prevent access along the trails and the trails generally maintain connectivity. The pipeline has also impacted the Lung Homestead but has had little impact to other resources in the valley. Other past and present uses of the valley such as recreation and grazing have had little to no impact to non-linear cultural resources.

Future projects that may contribute to cumulative effects from the implementation of the Parkway include increased access to heretofore remote BLM-administered lands, residential development along the Parkway corridor, and construction of more highways and other roads such as the proposed Loop 303 and the proposed I-11 (Hassayampa Freeway).

Future actions will result in moderate, long-term impacts to linear resources in Rainbow Valley. The construction of the proposed Loop 303 and the proposed I-11 will cross the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT corridor and Management Area, which would lead to further fragmentation of the resources and alterations of to the setting of those resources. The Loop 303 and I-11 will also disrupt the connectivity of the trails; however, like the Parkway, if crossings and access routes are provided, the presence of these roads may increase visitation and use of the historic trails. These impacts, taken in to consideration with impacts from past actions and the implementation of the Parkway as proposed, results in expected major, long-term cumulative effects to linear resources.

The Parkway and future development would change the character and usage of the southern end of Rainbow Valley from backcountry and rural to more suburban and urban interface. Induced growth along the Parkway corridor would introduce minor to moderate, long-term cumulative effects to cultural resources, such as additional removal of cultural resources from the landscape, and the indirect effect of altering the setting through visual and auditory impacts. Magnitude of effects to non-linear cultural resources would be dependent on property ownership and legal requirements. Cultural resources on Federal or state land, as well as resources on private land for which a Federal permit is required, are subject to Federal regulation. Adverse impacts to these sites would be mitigated under state and Federal laws; only minor cumulative effects are expected for cultural resources on Federal or state land. For historic properties on private land and not subject to state or Federal laws, moderate cumulative effects are expected. Including the Butterfield Overland Stage Route, 32 archaeological sites have been previously recorded north of SR 238 that could be impacted by future growth and development in Rainbow Valley.

Cumulative impacts may also include impacts to as-yet undiscovered historic properties as a result of future actions, such as future residential development in the study area, the Rainbow Valley ADMP, the conceptual Loop 303 alignment, the SR 347 realignment and the conceptual I-11 alignment. For all of these cumulative actions, the amount and type of disturbance to sites would be the primary impact indicator; however, existing regulations stipulate that all past, present, and future projects, including construction of utility lines, fire management, etc., on state or Federal lands, or on private lands if a Federal permit is needed, are subject first to cultural resources inventory. If sites are found during inventories, disturbance to those sites must be mitigated. Since avoidance is the primary design feature of any project, it can be assumed that the total number of cultural resources that would need to be mitigated further through data recovery or other means for these projects is minimal and would not significantly change the historic or prehistoric character of the analysis area; therefore, only minor cumulative impacts to undiscovered historic properties are anticipated for projects on Federal or state land or those that would require a Federal permit. For historic properties on private land, moderate cumulative effects are expected if disturbance to undiscovered historic properties is not mitigated under local, state, or Federal laws.

The implementation of the Parkway as proposed, along with past and future actions, would have a major, long-term cumulative effect on linear cultural resources in Rainbow Valley such as the Butterfield Overland Stage Route, the Komatke Trail; and the NHT and minor to moderate, long-term cumulative effects on other non-linear cultural resources in Rainbow Valley.

4.17.4.4 Soil Resources

The CEAA for cumulative impacts to soil resources is the extent of Rainbow Valley. The Rainbow Valley represents a reasonable region in which existing resources, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented. In this analysis, the Rainbow Valley is defined as the Waterman Wash and Rainbow Wash watersheds, bounded generally by the Buckeye Hills and Gila River to the north, the Sierra Estrella Mountains to the east, and the Maricopa Mountains to the south and west.

Reasonably foreseeable actions in the Rainbow Valley would result in further impacts to soil resources in the region by additional disturbance, grading, compaction, paving, development, and other actions and associated uses. These impacts would be moderate, long-term, and local, but would not be irreversible.

Impacts from population growth within the CEAA would result from the additional disturbance, grading, compaction, paving, and development of previously undeveloped and unoccupied areas. These would be local moderate long-term impacts as soil is disturbed, compacted, and covered with structures and pavement. These impacts would also occur in measurable units depending on the footprint of newly developed areas.

Increased development in the area could possibly also result in land subsidence depending on the location of the water supply and the rate of groundwater withdrawal for new development. Though the source of water supplies for future development is unknown at present, land subsidence impacts could be moderate and long-term.

4.17.4.5 Vegetation Resources

The CEAA for cumulative impacts to vegetation resources is the extent of the Rainbow Valley. This area, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

The implementation of the Parkway as proposed along with the past and present actions for this area could create a moderate, long-term cumulative impact to vegetation resources. The impacts of past actions on vegetation include the direct removal of vegetation, changes to vegetation communities from the introduction and spread of non-native species, changes to plant communities from changes in air quality, and the increased potential for fire due to the spread of non-native species.

Domestic livestock grazing, has historically impacted vegetation communities, and is presently and for the foreseeable future, an ongoing land use that would continue to affect vegetation. Private landowners also have wide latitude to conduct activities on their properties that would impact vegetation communities. These activities are, however, difficult to predict in time or space and their impacts are therefore not quantifiable.

Additional impacts from the Arizona Wilderness Act and designation of the SDNM have protected vegetation communities on the SDNM and in wilderness areas in the vicinity. Overall, past actions have had a moderate, long-term impact on vegetation communities in the CEAA.

Cumulative impacts from present actions on vegetation are similar to those described for past actions. Ongoing agricultural activities, livestock grazing, recreational use, and use of utility corridors has contributed to the loss and modification of existing vegetation communities from the direct loss of vegetation as well as the introduction and spread of non-native species. The designation of wilderness areas from the Arizona Wilderness Act and the SDNM continue to protect vegetation communities in those areas. The impacts of present actions on vegetation are moderate and long-term.

The implementation of the Parkway as proposed along with reasonably foreseeable actions for this area could create a moderate, long-term cumulative impact to vegetation resources. With the development of the proposed Parkway there could be impacts on vegetation from induced population and community growth that often follows when access and services are improved, which make development of the area more attractive. Induced growth would not be attributable solely to the Parkway as the probable development of the Loop 303 and I-11 in the CEAA would also likely induce growth in the area.

Reasonably foreseeable future actions, such as the Loop 303 construction, I-11 construction, residential developments (including master-planned communities), and renewable energy developments, could further contribute to this impact by the removal of vegetation and also potentially introducing non-native plants. However, one reasonably foreseeable action, the BLM Programmatic Weed EA—Waterman Wash, has the potential to reduce the impact of noxious and invasive species because its intent is to reduce the risk of wildfires through a reduction of fuels, restoring lands damaged by wildfire, and improving ecosystem health. Overall, the impact to vegetation would be moderate, long-term and local.

4.17.4.6 Visual Resources

The CEAA to visual resources is the extent of Rainbow Valley, which includes the SVPA. Rainbow Valley is defined by the Estrella Mountains to the east, SR 238 to the south, the Maricopa Mountains to the west, and the Buckeye Hills to the north. Rainbow Valley appropriately constitutes the area within which existing visual resource conditions and visual resource management objectives, when assessed in combination with other cumulative actions, would be moderately impacted if the Parkway were implemented.

Past and present suburban and rural growth, coupled with unique features, special designations, or conditions (e.g., desert mountain peaks or designated wilderness areas) helped define the visual resources setting that is described in Chapter 3.

Reasonably foreseeable actions such as future residential development, Loop 303, I-11 and SR 347 realignment would also cumulatively contribute to minor visual resources impacts in the area from each of the KOPs respectively. At this time, the alignments, dimensions, and construction methods of these transportation and future development projects are conceptual and in various stages of planning. Generally, the most evident cumulative impacts would be from KOP 2 (residence) and KOP 3 (Sierra Estrella Wilderness). From KOP 2 the addition of the proposed Parkway in combination with future residential, commercial, and transportation development would result in dramatic changes to the viewshed which currently is largely flat, open landscape. Line, texture, and color contrast from future roads would result in views of ribbons or bands of roadways that do not blend with the natural landscape. From KOP 3 (Sierra Estrella Wilderness) visual contrast would be located in middle ground and background distance zones; however, views from this point capture the entire panoramic expanse from an elevated position and therefore would afford views of multiple future developments culminating in moderate to strong visual contrast, tempered only by distance. From KOP 3 similar bands of roadway and additional human-made structure contrast would be evident in the viewshed. Though the Parkway would be a new road if developed, the presence of the existing transmission line and (EPNG) Pipeline Road have already established the existing visual character of typical views within the CEAA.

The indirect impacts of project growth to the SVPA would result in increased visitation and use of public lands located on the edges of communities. Cumulatively, these increases in general use would have a long-term, moderate impact to VRM where uses may be incompatible with existing VRM settings (e.g., increases in fugitive dust, route proliferation). The impact would be moderate since the existing visual characteristics would likely change, and these changes would occur over many years. Thus, the cumulative impact to VRM of project population growth would be a long-term, moderate impact.

Expansion of the Parkway north of the CEAA would have negligible cumulative effect to visual resources since the existing landscape characteristics have already largely been developed with residential housing, agricultural fields, and roadways, coupled with the lack of BLM-administered lands. The areas north of the CEAA are primarily privately-owned lands.

4.17.4.7 Water Resources

The area of analysis for cumulative impacts to water resources is the same CEAA as described in the introduction to Cumulative Impacts (Section 4.17). For surface water resources this includes a portion of the Gila River downstream from the Waterman Wash confluence and for groundwater resources the CEAA includes the entire Rainbow Valley groundwater sub-basin.

The past and present actions in the vicinity of the project that have had a direct effect on water resources are agriculture, and the expansion of the City of Goodyear. Long-term, adverse impacts from these past actions on surface water include the area of ephemeral drainages that have been disturbed or altered with

the footprint of an agricultural field or residential/commercial development. The long-term adverse impact to groundwater resources includes the amount of water that has been pumped for agricultural water or residential use or for the Sonoran Solar Energy Project.

Reasonably foreseeable actions in the CEAA with the potential to adversely affect surface water resources include future residential development within the Waterman Wash watershed; expansion of Rainbow Valley Road north of Riggs Road; Loop 303 construction; I-11 (Hassayampa Freeway) construction, and SR 347 realignment construction. All linear transportation projects have the potential to have long-term, moderate and local impacts to surface water drainage and quantity, these impacts can be reduced if they are designed to allow the passing of ephemeral flows to downstream washes.

Reasonably foreseeable actions with the potential to have a long-term minor effect on groundwater resources include the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa and the water use at the proposed Marisol Solar Park. The cumulative effect of expansion of surrounding communities has the potential to reduce groundwater availability with the additional water demands for new residential and commercial use that would be anticipated with the approximate projected population of 60,000 residents (City 2009). For comparison purposes, Phoenix's annual household water usage is approximately 73,000 gallons per year (City of Phoenix 2013).

4.17.4.8 Wildlife and Special-Status Species

The area of analysis for cumulative impacts to wildlife resources is the extent of Rainbow Valley, which includes the slopes of the surrounding mountains bounding the Rainbow Valley. The Rainbow Valley represents a reasonable region in which existing land uses, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

The implementation of the Parkway as proposed along with the past and present actions for this area could create a moderate, long-term cumulative impact to wildlife. These impacts could include an increased loss and/or disturbance of general wildlife and special-status species individuals and their habitat; and an increased risk of displacement and mortality to general wildlife and special-status species due to noise from construction and travel on the Parkway once constructed. Increased loss and/or disturbance of species and their habitat, impacts species by limiting the areas and the capacity in which they can live, forage, and reproduce. Similarly, displacement and mortality of species due to noise and Parkway travel can cumulatively result in the area no longer being compatible for certain species. Past and present actions, such as agricultural activities, Butterfield Station Landfill, transportation corridors, and utility ROWs (Table 4-28), have contributed to this impact by removal of habitat and increased human presence in the region.

With the development of the proposed Parkway there could be impacts on wildlife and wildlife habitat from induced population and community growth that often follows when access and services are improved, which make development of the area more attractive. Induced growth would not be attributable solely to the Parkway, as the probable development of the Loop 303 and I-11 in the CEAA would also likely induce growth in the area.

Additional future actions, such as the Loop 303 construction, I-11 construction, SR 347 realignment construction, residential developments, including master-planned communities, and renewable developments, could further contribute to these impacts by removal of habitat and increased human presence in the region.

4.17.4.9 Lands and Realty

The CEAA for lands and realty is the same as described in Section 4.17.1 Rainbow Valley represents a reasonable region in which existing land uses, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

The past and present land uses in the Rainbow Valley have had a direct effect on the conversion of lands from one use to another and on the ability to access the area. As described in the Affected Environment (Chapter 3), land in the Rainbow Valley is largely undeveloped and is characterized by desert; agricultural lands; areas used for grazing, mining, utilities, and recreation; and widely dispersed, low-density residential development. Past recreation use consists of mostly hiking, hunting, horseback riding, and driving for pleasure. Open desert and agricultural lands have been converted by past actions to residential, commercial, industrial, and conservation uses. These past actions include historic-era mining and agriculture, expansion of the city of Goodyear into the northern reaches of Rainbow Valley, the Butterfield Station Landfill, utility transmission lines and pipelines, and the designation of the SDNM.

Reasonably foreseeable actions in the Rainbow Valley include Loop 303 construction and I-11 construction; SR 347 construction, Marisol Solar Park, and the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa. These regional roadways would enable future residential development and would result in further changes to the types of land uses.

An increase in reasonably foreseeable future developments in the CEAA would contribute to the modification of the character of land use in the analysis area. As development occurs, the rural environment would become increasingly more residential, commercial, and industrial. Linear ROW projects, such as the proposed Parkway, are sited to avoid impacting sensitive cultural resources to the greatest extent practicable. As more reasonably foreseeable actions are constructed, this would cause a decreased availability of public lands for realty actions, increase demand for lands and realty actions, and change in value of the disposal tracts.

The Parkway would convert approximately 472 acres of existing land use from predominantly undeveloped desert land into a transportation land use. This would further reduce the amount of open space land uses (grazing, recreation, undeveloped land), but would increase the ability and likelihood for nearby communities to expand their current city limits and further convert existing land uses.

4.17.4.10 Livestock Grazing

The implementation of the Parkway as proposed along with past, present, and reasonably foreseeable actions in the cumulative impacts analysis area could create a moderate, long-term cumulative impact to livestock grazing resources. These impacts could include loss of AUMs from conversion of land in the allotments to other uses, increased number of fences that could fragment portions of the allotments, and increased barriers to permittee access on portions of the allotments.

The area of analysis for cumulative impacts to livestock grazing management is the extent of the Beloit and Conley grazing allotments. The Beloit and Conley grazing allotments represent a reasonable region in which existing grazing management, when assessed in combination with other cumulative actions, would be impacted if the Parkway is built.

The past and present land uses in the Beloit and Conley grazing allotments have had a direct effect on the extent of land available for grazing, the amount of acreage in the area, conversion of lands from livestock grazing to other uses and on the ability of the permittees to access the grazing allotments and any range improvements therein. Land in the Beloit and Conley allotments is largely undeveloped and is characterized

by desert, agricultural lands, and by areas used for grazing, mining, utilities, recreation, and widely dispersed, low-density residential development. Open desert and lands used for grazing have been converted by past actions to residential, commercial, industrial, and conservation uses. Commercial and residential development has encroached on lands used for grazing and reduced the amount of land and acreage available for cattle in the Beloit and Conley allotments. These past actions include historic-era mining and agriculture, the Butterfield Station Landfill, utility transmission lines and pipelines, and the designation of the SDNM. Article 7-4 of the City of Goodyear Code includes increased fencing requirements, which when considered incrementally with the fencing requirements of the Parkway, would result in long-term, adverse cumulative impacts. Article 7-4 has impacted livestock movement and increased fragmentation and has caused economic impacts to the Beloit permittee.

Reasonably foreseeable actions in the Beloit and Conley grazing allotments include Loop 303 construction, I-11 construction, the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa, and associated population growth. These developments of public, state, and private land would result in further changes to the vegetation communities that are used as forage for cattle grazing in the livestock grazing CEAA. The growth of master-planned communities would convert more lands to structures and urban landscaping. Based upon the City of Goodyear General Plan for land uses in Rainbow Valley at build-out, this area would support 86,000 residential dwelling units, and opportunities for approximately 48,000 commercial or industrial jobs within the 4,200 acres of commercially zoned land. Construction and expansions of freeways and roads would result in the removal and transformation of native vegetation communities to roadways, with a mixture of native and urban vegetation restoration in road ROWs. For both allotments, reasonably foreseeable actions, including the Loop 303, I-11, and solar development, would likely increase urban development throughout the area, potentially causing these two livestock operations to be untenable, particularly for the Conley allotment, which had 77,485 acres within the SDNM boundaries closed to livestock grazing in 2014, and has more private land fragmentation within its remaining boundaries.

4.17.4.11 Recreation Management

The CEAA for recreation cumulative impacts is the same as described in Section 4.17.1. The Rainbow Valley represents a reasonable region in which existing recreational resource conditions, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

The past and present land uses in the Rainbow Valley have had a direct effect on the availability to access, and thereby experience, a variety of recreation settings and opportunities. Low-density residential and agricultural developments have converted native shrub communities of the Rainbow Valley to urban landscaping and agricultural crops and pastures. Commercial and residential developments have led to surface disturbances and clearing of vegetation and planting of both native and non-native vegetation. Population growth has increased traffic and pressure in recreational areas. While large parts of the SVPA and Rainbow Valley remain undeveloped, the mixture of land use development has altered the land, its character, and the viewshed, a minor and long-term impact.

The designation of SDNM created opportunities for both developed and primitive recreation experiences. The SDNM RMP Amendment decision to make target shooting available on approximately 435,700 acres within the monument also resulted in expanded recreational activities. Additionally, implementation of the Juan Bautista de Anza Recreation Management Zone, Recreation Plan would increase recreation facilities on the SDNM.

The population of Goodyear and the surrounding region is expected to grow and correspondingly the demand for areas in which to recreate. Development on state and private land would result in a loss of recreational opportunities and a change of recreation settings on the adjoining public land. Building Sonoran

Solar energy project, as well as authorizing Loop 303, I-11 and other roadways on public lands would limit opportunities for dispersed recreation. Increased recreational use in areas such as the SDNM, the Maricopa Wilderness Complex, Estrella Mountains Regional Park, and the Sierra Estrella Wilderness may create conflicts between users that may be seeking different recreational settings and experiences.

Reasonably foreseeable actions in the Rainbow Valley include Loop 303 construction, I-11 construction, SR 347 realignment construction, SDNM RMP Amendment for Target Shooting implementation, and the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa. These potential developments would result in moderate, local and long-term impacts to the existing recreation experience, setting, and opportunity.

4.17.4.12 Travel Management

The area of analysis for cumulative impacts to travel management is both the extent of the Rainbow Valley described in Section 4.17.1, as well as the regional transportation planning area bounded by Maricopa County lines.

On a local level, the past and present land uses in Rainbow Valley have had a direct effect on the conversion of vacant lands to designated transportation routes. Past and present actions within the study area relevant to travel management have included the construction of SR 238 and utility roads for both EPNG and Transwestern; and the expansion of the city of Goodyear.

As discussed in Chapter 4, Section 4.12, an indirect impact of additional mobility would be increased accessibility. Cumulatively, the reasonably foreseeable actions (particularly roadway projects such as Loop 303, I-11, and SR 347 realignment) in the Rainbow Valley may change existing access (increase or decrease) or introduce new access. It is assumed that the proposed Parkway and other reasonably foreseeable actions (Loop 303, I-11, Parkway north of Riggs Road) would increase accessibility to the Rainbow Valley and the public lands, including SDNM. The existing BLM road network would likely see increased traffic, resulting in degraded roadbeds and increased maintenance need.

The potential development of the proposed Parkway and other roadways would result in further changes to travel management within the area, a moderate, local and long-term impact.

4.17.4.13 Special Designations

The CEAA for special designations is the same as described in Section 4.17.1. The Rainbow Valley represents a reasonable region in which existing special designations, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

Future roadways and development could make trail connectivity (Anza NHT and Butterfield Overland Stage Route) more difficult to achieve, and would potentially be in conflict with the overall character of the trails.

Other reasonably foreseeable actions in the Rainbow Valley include Loop 303 construction, I-11 construction, SDNM RMP Amendment for Target Shooting implementation, execution of Anza NHT Plan, SR 347 realignment construction and the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa. These potential developments would further alter the existing landscapes and would represent a cumulative impact to special designations. The SDNM and Wilderness areas within the analysis area are managed to protect the biological, scientific, and historical resources and the wilderness character of BLM-administered lands. Future development in the analysis area would result in the removal of vegetation communities (both native and agricultural) that would impact wildlife and reduce or change their

habitat. Future expansion of surrounding communities would convert more lands to structures and urban landscaping. Additional roads and structures reduce available habitat, block or alter wildlife movement, and would likely result in disturbance of cultural and heritage resources. The additive effect to special designations would, over time and as the reasonably foreseeable activities are implemented, result in adverse cumulative effects to the special designations in the local area. The cumulative effect would be moderate and long-term.

4.17.4.14 Noise

The CEAA for noise-related cumulative impacts is the extent of the Rainbow Valley, which is described in Section 4.17.1. The Rainbow Valley represents a reasonable region in which existing Category B land uses, when assessed in combination with other cumulative actions, would be impacted if the Parkway were implemented.

The past and present actions in the Rainbow Valley have had a direct effect on existing noise levels in the area. Land in the Rainbow Valley is largely undeveloped and is characterized by desert, agricultural lands, and by areas used for grazing, mining, utilities, recreation, and widely dispersed, low-density residential development. Past recreation use consists mostly of hiking, hunting, horseback riding, and driving for pleasure. SR 238 contributes vehicular traffic noise to the region. However, the combination of sparse development and the lack of a substantial transportation network have contributed to the low 1-hour equivalent noise levels measured in the area. The proclamation of the SDNM and the Arizona Desert Wilderness Act has set aside land that will not be developed, which will have a moderate, long-term positive impact on noise within the Rainbow Valley. Present actions have not significantly changed the rural character of the area, but ongoing planning studies (e.g., the MAG Hidden Valley Transportation Framework Study), have the potential for long-term, adverse impacts to noise.

Reasonably foreseeable actions in the CEAA include the implementation of I-11 (Hassayampa Freeway) and Loop 303, the future extension of Rainbow Valley Road north of Riggs Road, future construction of SR 347, the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa, the reopening of roads within the SDNM, and the construction of the Sonoran Solar energy project. These roadways and potential developments would result in increased urbanization of the area and the increased proximity of Category B land uses to an expanded local roadway network. Peak hour noise levels could potentially increase due to increases in traffic and roadway design speeds. Future design features to decrease the impacts of noise (e.g., sound walls, etc.) are unknown at this time.

Noise impacts from these actions would be moderate, local, and long-term when considered incrementally with the noise that traffic on the Parkway would emit.

4.17.4.15 Hazardous Materials and Public Safety

The CEAA for hazardous materials and public safety is the extent of Rainbow Valley. The Rainbow Valley represents a reasonable region in which existing land uses, when assessed in combination with other cumulative actions, would be impacted if the Parkway was built.

The list of identified future actions includes Loop 303 construction, I-11 construction, various pipelines, SR 347 realignment, and the future expansion of the surrounding communities of Goodyear, Mobile, and Maricopa. These potential projects and developments would result in additional use of hazardous materials and increased quantities of generated solid waste during their construction phases, additional transportation of hazardous materials through the area of analysis during their use, and additional generation of solid waste after the communities are developed. However, it should be noted that like the Parkway, these types of projects are also required to implement safety-related plans and programs to ensure safe handling, storage,

and use of hazardous materials. Implementation of proper design features by the construction companies, as well as compliance with Federal, state, and local regulations, would provide sufficient minimization to help ensure that there would be no direct or indirect impacts from the use of hazardous materials or the generation of solid waste by these activities.

4.17.4.16 Cumulative Effects Summary

A summary of cumulative impacts by resource is presented in Table 4-29.

Table 4-29. Summary of Direct, Indirect, and Cumulative Effects

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Social and Economic Resources	Low-density development and livestock grazing in the CEAA. Designation of the SDNM.	Low-density development and livestock grazing in the CEAA.	Long-term increases in population, population density, property values, and development along the Parkway. Loss and fragmentation of livestock grazing allotments.	Proposed development, Loop 303, and I-11 would have a major, long-term impact to the economics of livestock grazing in the area of analysis.	Major, long-term increases in population, population density, property values, and development in the CEAA and Rainbow Valley Road. Major, long-term impact to the economics of livestock grazing in the CEAA. Acceleration of development and other impacts due to Parkway being constructed several decades prior to Loop 303 and I-11. Concentration of impacts along the Parkway and Rainbow Valley Road.
Air Resources and Climate Change	Past actions include agricultural activities and recreational land use. Past and current emission sources include the Butterfield Station Landfill, SR 238, the (EPNG) Pipeline Road and access road, the Transwestern Gas Pipeline and access road, and the Salt River Project 500-kV transmission line. The Parkway is located within a PM ₁₀ nonattainment area and an 8-hour O ₃ nonattainment area. The SDNM has closed approximately 88 miles of dirt roads to the public.	Air quality is anticipated to remain the same as currently measured by existing ambient air quality monitors.	Minor, short-term construction emissions; minor, long-term operation emissions from the two-lane Parkway.	Long-term increases in the future residential development in the Rainbow Valley and the city of Goodyear due to the presence of the Parkway and other major roadways such as Loop 303, I-11, SR 347, and the expansion of Rainbow Valley Road north of Riggs Road. The SDNM may potentially re-open roads to the public. The Marisol Solar Park and Sonoran Valley Energy Project are expected to be built within or near the Rainbow Valley.	Potential long-term impacts due to RFFAs and growth in the region. In addition to the Parkway, expansion of Rainbow Valley Road, Loop 303, SR 347, and I-11 will increase accessibility and affect residential growth. If the SDNM re-opens dirt roads to the public, emissions of PM ₁₀ may potentially degrade air quality in the Rainbow Valley. The two solar energy projects have the potential for minor, short-term construction emissions.
Cultural and Heritage Resources	Minor direct impacts, long-term from roadways and pipelines across the valley to the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT. Minor, direct, long-term impacts from roadways, pipelines, grazing, and recreation to archaeological sites.	Minor direct, long-term impacts from roadways and pipelines across the valley to the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT. Minor direct, long-term impacts from roadways, pipelines, grazing, and recreation to archaeological sites.	Minor to moderate direct, long-term impacts to the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT. Moderate to major direct, long-term impacts to archaeological sites along proposed route. Minor indirect impacts from increased visitation to the area.	Moderate direct, long-term impacts from further fragmentation of the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT by proposed roadways. Moderate to major, long-term direct impact through the disturbance to cultural resources from increased residential and commercial development. Moderate indirect impacts from increased visitation to the area.	Major, long-term cumulative effects to the Butterfield Overland Stage Route, the Komatke Trail, and the Anza NHT by proposed roadways through fragmentation of the resources throughout Rainbow Valley. Minor to moderate, long-term cumulative effects through the disturbance to cultural resources from increased residential and commercial development and increased visitation to the area depending on property ownership and permitting regulations.

Table 4-29. Summary of Direct, Indirect, and Cumulative Effects (continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Soils	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts to areas permanently covered by pavement and graded shoulders.	Moderate, long-term impacts to areas that are disturbed, graded, compacted, paved, and/or developed by future actions.	Moderate, long-term cumulative effect to areas that are disturbed, graded, compacted, paved, and/or developed by future actions. Increased development in the area could result in increased rates of subsidence or possibly new areas of subsidence, depending on the location of the water supply and the rate of groundwater withdrawal. These impacts would be moderate and long-term.
Vegetation	Moderate, long-term impact from disturbance to vegetation communities from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, non-native plant introduction and spread, and the Butterfield Station Landfill.	Moderate, long-term impact from current activities to vegetation communities from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, non-native plant introduction and spread, and the Butterfield Station Landfill.	Site-specific, long-term, negligible impacts from vegetation removal and the introduction of non-native plant species to vegetation due to construction activities and operation of facilities.	Moderate, long-term impacts to vegetation due to removal of vegetation during construction activities from future residential development; the Loop 303 and I-11 development; SR 347 expansion of Rainbow Valley Road for increased traffic; and Marisol Solar Park. Mitigating effects would reduce impacts from removal of vegetation from development of BLM Programmatic Weed EA for Waterman Wash.	Moderate, long-term cumulative effect during construction and operation. Collocated facilities reduce overall impacts to vegetation communities and application of mitigation measures would reduce impacts. Vegetation communities impacted by cumulative actions are common and widespread in the region.
Visual Resources	Low-density development, transmission and pipeline development, agriculture, SDNM proclamation.	Minor, long-term impact from recreation use.	Minor but long-term changes to existing visual character. No impacts to existing VRM settings.	Proposed I-11, Loop 303, Marisol Solar Park, and realignment of SR 347 would have a moderate, long-term cumulative effect to visual resources.	Moderate, long-term changes to existing visual character. Concentrations of impacts along SDNM.
Water Resources	Moderate, long-term adverse impact to surface water from disturbance to ephemeral washes from agriculture, residential, and commercial development. Long-term positive impact from Rainbow Valley ADMP, closing of roads, and designation of wilderness areas. Moderate, long-term adverse impact to groundwater resources from water use by agricultural, and residential development.	Moderate, long-term adverse impact to surface water from disturbance to ephemeral washes from agriculture, residential, and commercial development. Long-term positive impact from Rainbow Valley ADMP. Moderate, long-term adverse impact to groundwater resources from water use by agricultural and residential development.	Minor, long-term direct impact to surface water from disturbance at wash crossings and in floodplains. No impact to groundwater resources.	Moderate, long-term adverse impact to surface water from disturbance to ephemeral washes from future residential development. Minor long-term impacts to surface water from expansion of Rainbow Valley Road, construction of Loop 303 and I-11, SR 347 realignment, and reopening roads in SDNM. Moderate, long-term adverse impact to groundwater resources from water use by future residential development, and Sonoran Solar Energy Project	Moderate, long-term adverse impacts to surface and groundwater for the life of the project. Mitigation measures applied to the Parkway and other future linear transportation projects would minimize impacts to surface water resources.

Table 4-29. Summary of Direct, Indirect, and Cumulative Effects (continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Wildlife	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, livestock grazing, utility ROWs, and the Butterfield Landfill.	Moderate, long-term habitat loss, habitat fragmentation, and direct mortality from construction equipment during construction. Moderate, long-term impacts during operational/maintenance from direct mortality on the Parkway, habitat loss, and habitat fragmentation.	Moderate, short- to long-term habitat loss, degradation, fragmentation, and species mortality during construction and operation, as well as increased non-native plant introduction and spread.	Moderate, long-term cumulative effect during construction and moderate, long-term effects from operation. The impact is moderate because wildlife resources would partially retain existing character and some baseline conditions would remain unchanged.
Lands and Realty	Moderate, long-term impacts from roadways, pipelines, agriculture, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, utility ROWs, and the Butterfield Landfill.	Moderate, long-term cumulative impact during construction and moderate, long-term effects from operation.
Livestock Grazing	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from roadways, pipelines, agriculture, recreational use, housing development, utility ROWs, and the Butterfield Landfill.	Moderate, long-term impacts from AUM loss, fragmentation of the Beloit and Conley allotments, and increased barriers for permittees to access allotments.	Moderate, long-term impacts from AUM loss, increased fragmentation of allotments, and increased barriers to permittee access of allotments.	Moderate, long-term cumulative impact during construction and moderate, long-term effects from operation.
Recreation	Proliferation of mining and ranching roads; establishment of Federal, state, and private lands; community development.	Recreation activity anticipated to remain at current seasonal levels; there is a noticeable increase in recreational activities during summer and hunting seasons.	Minor, short-term decrease in recreational activities and desired experiences during construction. During operation and maintenance, recreational activity would be anticipated to remain at current levels.	Minor, short-term decrease in recreational activities during construction only. The Marisol project would preclude all recreation during construction and operation. Site-specific recreation changes from implementation of the Sonoran Desert National Monument Target Shooting EIS. Long-term minor to moderate changes to recreational need for solitude.	Minor cumulative effect during construction and operation.
Travel Management	Establishment of Federal, state, and private lands; community development, construction and operation of roads.	Continued operations and maintenance of existing transportation infrastructure.	Short-term, short-term minor adverse impacts to traffic on primary roadways. Long-term, moderate adverse impacts of increasing accessibility to areas currently not accessible by the public.	Future transmission, generation, and transportation projects would generate long-term minor adverse impacts to traffic on primary roadways, conform to transportation plans, and have the potential to increase access to surrounding BLM-administered lands.	Long-term moderate adverse impact to increasing accessibility to the Rainbow Valley and surrounding BLM-administered lands.

Table 4-29. Summary of Direct, Indirect, and Cumulative Effects (continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Special Designations	Prehistoric and historic use of natural features or routes, Establishment of Federal, state, and tribal special designations; road, ranching, and mineral development	Uses of special designations are anticipated to remain at current seasonal levels; there is a noticeable increase in activities during summer and hunting seasons.	Minor, short-term impact to special designations during construction; minor, long-term impacts to special designations during operation.	Minor, short-term impact to special designations during construction; minor, long-term impacts to special designations during operation.	Minor, long-term cumulative effect since the proposed Parkway and all future cumulative actions must conform to the prescriptions of special designations.
Noise	Moderate, long-term adverse impact to baseline noise levels due to traffic on SR 238, the City of Goodyear annexation of the Rainbow Valley, and plans within the MAG Hidden Valley Transportation Framework Study. Moderate, long-term positive impact to baseline noise levels due to the Arizona Desert Wilderness Act of 1990, the SDNM Proclamation. A minor, short-term positive impact to noise would result from roads in SDNM that have been closed to public use. A minor, short-term increase in noise levels would result from the construction of the Sonoran Solar Energy Project.	Moderate, long-term impact to noise from the operation and implementation of SR 238, the growth of the Rainbow Valley, and plans within the MAG Hidden Valley Transportation Framework Study.	Minor, short-term impact from the construction of the Parkway. Moderate, long-term impact to noise from the operation of the Parkway.	Moderate, long-term adverse impacts to noise from future expansion of Rainbow Valley Road north of Riggs Road, future residential development in the Rainbow Valley and the city of Goodyear, implementation of the Sonoran Desert National Monument Target Shooting EIS and the construction and operation of Loop 303, I-11 (Hassayampa Freeway, CANAMEX corridor), and SR 347 realignment. Minor, long-term adverse impacts to noise can be expected when SDNM roads re-open to the public. There may be a minor, short-term impact to noise due to the construction and operation of the Marisol Solar Park.	A potential for moderate, long-term adverse impacts to noise for the life of the project. Mitigation measures applied to the Parkway and other RFFAs would minimize impacts to noise.
Hazardous Materials and Public Safety	Butterfield Station Landfill is not known to contribute environmental contamination. The RM Cat Environmental Services Remediation Site is thought to have had minor local short-term impacts.	No present actions are known to be contributing hazardous materials and public safety impacts.	With adherence to LORS and the voluntary City-committed environmental protection measures, construction and operation of the project would not result in direct or indirect impacts from hazardous materials or solid waste to surrounding soils, surface water, or groundwater.	Future actions are also required to implement safety-related plans and programs to ensure safe handling, storage, and use of hazardous materials, and because they must comply with Federal, state, and local regulations, there would be no direct or indirect impacts from the use of hazardous materials or the generation of solid waste by these activities	Because they are required to implement safety-related plans and programs to ensure safe handling, storage, and use of hazardous materials, and because they must comply with Federal, state, and local regulations, none of the identified future actions, when combined with the proposed project, would contribute to a cumulative effect on the generation of hazardous materials and solid waste in the area of analysis.

5 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

CEQ regulations implementing NEPA require that Federal agencies provide meaningful opportunities for the public and stakeholders to provide input and identify their concerns with the EIS process. Federal laws, such as the ESA, CWA, and the NHPA, mandate public involvement and consultation with agencies or Federally recognized tribal governments.

This chapter documents the specific consultation and coordination efforts undertaken by the BLM throughout the entire process of developing the Parkway DEIS. A complete list of agencies and individuals who received the DEIS can be found in the Administrative Record.

5.2 PUBLIC INVOLVEMENT

The BLM has taken a variety of steps to inform Federal local, and state agencies, Tribes, the public, and special interest groups about the proposed action alternatives for the Parkway, and to solicit feedback from these interested parties to help shape the scope and alternatives of this project.

5.2.1 Public Scoping Meetings

A NOI to prepare the EIS was published in the *Federal Register* on April 2, 2008. Publication of the NOI initiated a 60-day formal public and agency scoping period, during which the BLM advertised the EIS process through a wide variety of methods and solicited comments regarding the project and regarding its potential impacts. Table 5-1 includes a list of meetings that took place, the topics discussed, and meeting attendees.

Table 5-1. List of Meetings, Meeting Topics, and Meeting Attendees

Date	Agency/Group	Discussion/Topic	BLM Attendees
May 28/29, 2008	Public	Project overview, alternatives	Kathleen Depukat, Emily Garber, Cheryl Blanchard, Jack Ragsdale, Jim Andersen
February 27, 2009	City of Goodyear, V3 Companies	Kick-off meeting	Kathleen Depukat, Emily Garber, Cheryl Blanchard, Jack Ragsdale, Jim Andersen
March 10, 2009	City of Goodyear, BrightSource Energy	Project overview	Kathleen Depukat
April 21, 2009	AGFD	Project introduction and invitation to cooperate	Kathleen Depukat, Lori Young
May 7, 2009	AGFD	Site visit	Kathleen Depukat, Cheryl Blanchard, Lori Young
May 15, 2009	City of Goodyear, AGFD, ConTech, V3 Companies	Wildlife corridors/crossings	Kathleen Depukat, Lori Young
September 8, 2009	AGFD	Wildlife corridors/crossings	Kathleen Depukat, Tim Hughes
October 7, 2009	MAG, ADOT	I-11/SR 303L	Kathleen Depukat
April 6, 2010	City of Goodyear	Project schedule	Kathleen Depukat, Emily Garber

Table 5-1. List of Meetings, Meeting Topics, and Meeting Attendees (continued)

Date	Agency/Group	Discussion/Topic	BLM Attendees
November 18, 2011	BLM ID Team	Alternatives	Kathleen Depukat, Emily Garber, Dave Scarborough, Jack Ragsdale, Steve Bird, Andrea Felton
June 25, 2012	ADOT, AGFD, ASLD, City of Maricopa, MAG, City of Goodyear	Cooperating agency kick-off meeting	Kathleen Depukat, Emily Garber, Cheryl Blanchard, Jack Ragsdale, Andrea Felton
October 17, 2012	City of Goodyear, AGFD	Wildlife crossing recommendations	Kathleen Depukat, Steve Bird, Andrea Felton, Dave Scarborough, Joe Schmitz, Harvey Krauss, Christine McMurdy, Dana Warnecke, Michael Ingraldi, Scott Sprague
January 16, 2014	Ak-Chin Indian Community, Gila River Indian Community	Project overview/site visit	Benedict Parsons, Cheryl Blanchard
May 17, 2014	Ak-Chin Indian Community, Gila River Indian Community	Programmatic Agreement discussion	Ed Kender, Benedict Parsons, Cheryl Blanchard
June 3, 2014	Ak-Chin Indian Community, Gila River Indian Community	Site Visit	Cheryl Blanchard
August 11, 2014	Ak-Chin Indian Community, Gila River Indian Community	Programmatic Agreement discussion	Cheryl Blanchard
September 10, 2014	Gila River Indian Community	Site Visit	Benedict Parsons, Cheryl Blanchard

5.2.2 Scoping Report

A detailed description of the scoping process, issues derived from the comments, and analysis of the information received is contained in the BLM April 2009 scoping report (BLM 2009b). The BLM received 17 scoping letters from individuals and businesses; Federal, state, and local agencies; and nongovernment organizations. Informal comments captured through the public scoping meeting notes were also included in the scoping report (Appendix Q).

5.2.3 Additional Project Outreach

Additional data gathering was conducted during 2009 and 2010, and alternatives development was conducted during 2011 and 2012. A brief project newsletter was developed and posted to the BLM website in 2012 to update the public on the status of the project. A postcard with the BLM contact information and website link was mailed to stakeholders in February 2013.

5.3 AGENCY COORDINATION/CONSULTATION

5.3.1 Cooperating Agency Involvement

During April 2012, BLM initiated MOU invitations to local municipalities and agencies, whose purpose would be to establish a formal Parkway cooperating agency partnership. ADOT, AGFD, ASLD, MAG, NPS, FCDMC, and City of Maricopa became cooperating agencies.

The cooperating agencies assisted with DEIS preparation by providing; up-to-date and relevant studies and inventories, reviewing public involvement documents, identifying issues, assisting with the formulation of alternatives, and reviewing Administrative Draft EIS text and other DEIS materials (as specified in 40 CFR

1501.6[b]). BLM and their subcontractor hosted monthly informational conference calls with the cooperating agencies. Not all of the cooperating agencies participated in all aspects of the EIS preparation. As lead agency, BLM is responsible for the content of the EIS.

5.3.2 Additional Coordination and Consultation

5.3.2.1 *Arizona State Historic Preservation Office*

The BLM is the lead Federal agency for compliance with the NHPA and consulted with the respective SHPO, tribes, state and local governments, and other parties that may have a concern with a project's effects on historic properties. The Arizona Historic Preservation Office is the designated SHPO for Arizona. Consultation for this project was initiated by letter in March 2013.

In consultation with the Arizona SHPO, the BLM made an "adverse effect" determination for the proposed project. In September 2013, BLM and SHPO determined that preparation of a PA is appropriate because the effects of this proposed project cannot be fully determined prior to the approval of the project (800.14(b) (1) (ii)) since the project could be approved in phases (Section 2.5.2 in Chapter 2). The PA stipulates the process necessary to comply with Section 106 obligations for construction, operation, maintenance, and decommissioning of the proposed project. The executed PA is included as Appendix C.

5.3.2.2 *Environmental Protection Agency*

Since the Parkway project is proposed in areas that do not currently contain paved roadways and is partially located within a non-attainment area as defined by the CAA, the EPA has provided expertise for the Parkway's construction and potential impacts to air quality.

5.3.2.3 *U.S. Army Corps of Engineers*

Section 404 of the CWA regulates the discharge of dredged or fill material into WUS including wetlands and other special aquatic sites. Impacts to each wash are anticipated to be treated separately as non-notifying under Nationwide Permit No. 14, because this is a linear transportation project.

5.3.2.4 *U.S. Fish and Wildlife Service*

Because of the potential for the Parkway to impact listed threatened and endangered, proposed, and candidate species, BLM initiated Section 7 consultation; however, USFWS declined invitations to become a designated cooperating agency.

On March 7, 2014, the BLM sent a letter to the USFWS requesting a "technical assistance request." The Parkway would be anticipated to result in ESA impacts that "may affect, but is not likely to adversely affect" Tucson shovel-nosed snake and Sonoran Desert tortoise (ESA candidate species). USFWS responded on April 16, 2014 with no objections. On September 23, 2014 USFWS found that it was not warranted to list the Tucson shovel-nosed snake as threatened or endangered and the species was removed from the list of Candidate species.

5.4 TRIBAL CONSULTATION

The BLM LSFO initiated tribal consultation in June 2008 by sending out letters to the chairmen of five tribes. These included the Ak-Chin Indian Community, the Gila River Indian Community, the Tohono O'odham Nation, the Salt River Pima-Maricopa Indian Community, and the Hopi Tribe. Courtesy copies were sent to each tribal cultural resources staff member under separate cover. The letters indicated that

consultation would be initiated under NEPA, NHPA, and the American Indian Religious Freedom Act (AIRFA) and that an EIS would be written that would analyze the impacts to natural and cultural resources. The Hopi Tribe sent a response letter in August 2008.

In April 2012, a letter updating the status of the project was sent to the tribal chairs and associated cultural staff for the five tribes mentioned above.

On March 11, 2013, certified letters were sent to the five tribes regarding the availability of the DEIS and summarizing previous consultation and coordination efforts. This letter was also an invitation for the tribes to attend the public meetings held for the DEIS. One comment letter was received from the Hopi Tribe regarding the DEIS. In May 2013, BLM attended the Four Southern Tribes Cultural Working Group meeting and discussed the proposed Parkway with attendees of that meeting.

BLM hosted a field trip to the proposed Parkway project area for Ak-Chin Indian and Gila River Indian Community members on January 16, 2014. The primary purpose for the trip was to familiarize field trip attendees with the Rainbow Valley area and in particular, the setting of the proposed project and its relationship to the Estrella Mountains. BLM met with members of the Ak-Chin and Gila River Indian Communities in Sacaton on May 19, 2014, and August 11, 2014, to discuss how Section 106 of the NHPA is being handled for the project. Subsequent field trips were scheduled. BLM hosted a second field trip to the Espanto Mountains near the proposed Parkway and at the north end of the proposed Parkway near the alignment of the Komatke Trail, for Ak-Chin Indian and Gila River Indian Community members on June 3, 2014, and September 10, 2014. The purpose of the field trip was to discuss the cultural landscape of the proposed project in the SDNM. On August 11, 2014, BLM met with members of the Ak-Chin and Gila River Indian Communities in Sacaton to discuss the PA and schedule an additional field site visit to the northern portion of the Parkway project area. On September 10, 2014, BLM and Gila River Indian Community members conducted a site visit to determine the location of a traditional-use trail corridor and the potential for the Parkway to intersect the trail corridor (Table 5-1).

5.4.1 Specific Tribal Consultation Actions

In recognition of the special relationship with the United States government, the BLM continues to consult with the appropriate tribal governments at an official, executive level (government-to-government). The BLM worked with the Ak-Chin and Gila River Indian Communities throughout 2015 as the PA was finalized. The BLM continued to provide opportunities for government officials of Federally recognized American Indian tribes to participate in the final decisions, and inform them of how their comments were addressed in those decisions.

5.5 RECIPIENTS OF THIS FINAL ENVIRONMENTAL IMPACT STATEMENT

Pursuant to CEQ regulations (40 CFR 1502.19) the BLM is circulating this Final EIS to 1) Agencies having jurisdiction by law or special expertise with respect to any environmental impact involved and any appropriate Federal, state, or local agency authorized to develop and enforce environmental standards, 2) The applicant, and 3) Any agencies, organizations, or individuals requesting a copy of the document.

The Parkway EIS distribution list was developed from the stakeholder lists compiled prior to and during the scoping process, which was then supplemented throughout the planning process.

Those reviewing the Final EIS have a 30-day availability period, after which BLM may sign the Record of Decision.

5.6 LIST OF PREPARERS

Name		Role/Responsibility
Bureau of Land Management		
Andersen	Jim	Lands Use/Access/Lead Realty Specialist
Bickauskas	Tom	Travel Management/Travel Management Coordinator
Bird	Steve	Wildlife/Wildlife Biologist
Blanchard	Cheryl	Cultural Resources/Archaeologist
Buttazoni	Brian	NEPA Coordinator
Dachler	Michael	Wildlife Biologist
Felton	Andrea	Livestock Grazing/Rangeland Management Specialist
Garber	Emily	Project Management/Field Manager
Hanson	Rich	Project Management/SDNM Manager
Horyza	Chris	NEPA Adequacy/NEPA Coordinator
Hughes	Tim	Wildlife/Wildlife Biologist
Johnson	Michael	Social, Economic, and Environmental Justice/Zone Social Scientist
Kender	Ed	Field Manager
Monger	Darrel	Wilderness, National Monuments, Special Designations, Visual Resources/SDNM Manager
Parsons	Ben	Realty Specialist/Project Manager
Ragsdale	Jack	Recreation/Recreation Planner
Tipton	Ron	Wildlife/Biologist
Young	Lori	Wildlife/Biologist

Name		Role/Responsibility
SWCA Environmental Consultants		
Bellavia	Cara	Project Manager, Social and Economic Conditions/Office Director, Phoenix
Bell	Shari	Document Formatting/Formatter
Cecere	Pamela	Visual Resources, Travel Management, Social and Economic Conditions/Environmental Planner
Desruisseaux	Danielle	Technical Editing/Technical Editor
Gladding	Eleanor	Vegetation Resources, Wildlife and Special-Status Species/Biologist
Johnson	Jeffery	Vegetation Resources, Wildlife and Special-Status Species/Environmental Planner, Biologist
O'Brien	Steve	Soil Resources, Hazardous Materials/Public Safety/ Environmental Specialist
Orcutt-Gachiri	Heidi	Technical Editing/Technical Editor
Query	Chris	Maps and Figures/ GIS/CADDSpecialist
Rausch	Ryan	Assistant Project Manager, Lands and Realty, Recreation Management, Special Designations/Environmental Planner
Rietz	DeAnne	Water Resources/ Hydrologist
Rigg	Jonathan	Livestock Grazing/Wildland Fire/Planning Specialist
Tremblay	Adrienne	Cultural and Heritage Resources, Paleontological Resources/Archaeologist
Sloat	Daniel	Air Resources and Climate Change, Noise/Environmental Specialist

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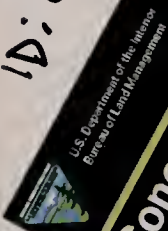
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